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# SPECIFICATIONS FOR CRUDE OIL IN THE USSR



ORR PROJECT 25.193

(Part I)

1 November 1954

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

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FOREWORD

This compilation of crude oil specifications in the USSR has been prepared as a research aid. It provides a logical arrangement and summarization of data contained in a published translation of GOST (Gosudarstvennyy obshchesoyuznyy standart -- State All-Union Standard) 912-46. No conclusions or interpretations based on these specification data are made.

These data constitute Part I of ORR Project 25.193. Part II will cover Soviet specifications on a selected list of petroleum products.

No formal coordination has been sought. This information is available in translated form, and the arrangement presented here has been discussed with others in the intelligence community.

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SPECIFICATIONS FOR CRUDE OIL IN THE USSR

I. Introduction.

The crude oil specification data tabulated in Appendixes A, B, and C have been extracted from CIA, Foreign Documents Division, Translation No. 311, dated 13 August 1951, Classification of USSR Petroleums According to GOST 912-46.

These data represent the latest available factual information concerning Soviet crude oils. The description and specifications have been arranged, grouped, and summarized to provide an easily accessible research aid.

No attempt has been made to draw conclusions of any type from this material. Supplemental textual information may be found on pages 1 to 4 and 58 to 80 of the published translation described above.

In Appendix A, the 175 Soviet crude oils specified are summarized and arranged into five groups according to weight percent gasoline yield. The number and percent of total crudes falling into these groups is shown. Also shown within each group are the total number of crudes which comply with other standard specifications.

Appendix B is a breakdown, by oil regions, of the information contained in Appendix A.

In Appendix C the individual crude oils are grouped according to oil fields, and the specifications for each are given in detail.

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## II. Alphabetical Index of Crude Oils.

| <u>Name of Crude</u>                       | <u>Region</u>        | <u>GOST 912-46<br/>Serial Number</u> | <u>Page</u> |
|--------------------------------------------|----------------------|--------------------------------------|-------------|
| Achi                                       | Dagestan             | 79                                   | 110         |
| Adagumskaya                                | Kubano-Chernomorskiy | 112                                  | 97          |
| Ala-Myshikskaya                            | Fergana              | 68                                   | 99          |
| Ali-Yurt                                   | Groznyy              | 115                                  | 93          |
| Andizhan, Pool VII                         | Fergana              | 71                                   | 99          |
| Apsheironskiy, Heavy, Pool C1              | Kubano-Chernomorskiy | 32                                   | 95          |
| " " , West Sections, Shirvanskiy Wells     | "                    | "                                    | "           |
| " " , Light, Paraffin Free, Pool C2        | "                    | 96                                   | 95          |
| " " , Levels I and III                     | "                    | 121                                  | 95          |
| " " , Central Sections, Shirvanskiy Wells  | "                    | 133                                  | 95          |
| Artem                                      | Baku                 | 95                                   | 96          |
| Balakhan'y, Oily                           | Baku                 |                                      | 69          |
| " " , Heavy                                | Baku                 | 34                                   | 68          |
| Baychunas, East Field                      | Emba                 | 101                                  | 69          |
| Baychunas, East Section, North Field       | "                    | 28                                   | 79          |
| " " , West Section, North Field            | "                    | 29                                   | 79          |
| " " , West Section, North Field, Neocomian | "                    | 42                                   | 79          |
| " " , West Section, North Field, Jurassic  | "                    | 60                                   | 79          |
| " " , North Field, Neocomian               | "                    | 20                                   | 80          |
| " " , Aptian                               | "                    | 7                                    | 80          |
| " " , Resinous                             | "                    | 108                                  | 80          |
| Bibi-Eybat, Heavy                          | Baku                 | 92                                   | 65          |
| " " , Light                                | "                    | 98                                   | 65          |
| " " , Paraffinic                           | "                    | 120                                  | 66          |
| Binagady, Heavy                            | "                    | 99                                   | 70          |

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## Alphabetical Index of Crude Oils

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| <u>Name of Crude</u>             | <u>Region</u>        | <u>GOST 912-46<br/>Serial Number</u> | <u>Page</u> |
|----------------------------------|----------------------|--------------------------------------|-------------|
| Binagady, Diatomic               | Baku                 | 106                                  | 71          |
| Bitkovskaya                      | Western Ukraine      | 72                                   | 107         |
| Bogachevskaya                    | Kamchatka            | 13                                   | 108         |
| Borislav                         | Western Ukraine      | 86                                   | 107         |
| Buguruslan                       | Second Baku          | 138                                  | 86          |
| Buranchinskaya                   | "                    | 146                                  | 87          |
| Buzovny                          | Baku                 | 110                                  | 70          |
| Bystrinskaya                     | Western Ukraine      | 14                                   | 107         |
| Chakhnaglyarskaya                | Baku                 | 97                                   | 69          |
| Changyrtash                      | Fergana              | 84                                   | 99          |
| Chimion                          | Fergana              | 132                                  | 100         |
| Chusovoy                         | Second Baku          | 143                                  | 85          |
| Dossor, Central Field, Jurassic  | Emba                 | 2                                    | 72          |
| " , Tas-Kuduskiy                 | "                    | 12                                   | 72          |
| " , 185th Section, Central Field | "                    | 22                                   | 72          |
| Dzhaksmayskaya                   | "                    | 30                                   | 82          |
| Ekhabi                           | Sakhalin             | 62                                   | 102         |
| Gora-Asfal'tovaya, Light         | Kubano-Chernomorskiy | 82                                   | 96          |
| Gorskaya, Heavy, Pool II         | Groznyy              | 31                                   | 93          |
| Gorskaya, " , Pools III and IV   | "                    | 48                                   | 94          |

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## Alphabetical Index of Crude Oils

(Continued)

| <u>Name of Crude</u>                      | <u>Region</u>        | <u>GOST 912-46<br/>Serial Number</u> | <u>Page</u> |
|-------------------------------------------|----------------------|--------------------------------------|-------------|
| Gorskaya, Heavy, Pool XVIII               | Groznyy              | 61                                   | 94          |
| " , Paraffinic                            | "                    | 64                                   | 94          |
| Groznyy, Paraffinic, (Oktyabrskaya)       | "                    | 75                                   | 90          |
| " , West Sections                         | "                    | 76                                   | 90          |
| " , Solenaya Balka Section                | "                    | 77                                   | 90          |
| " , Layer under fault                     | "                    | 78                                   | 90          |
| " , Paraffin Free, Oily                   | "                    | 104                                  | 91          |
| Gudermes, Oil Well #7, Pool XXII          | "                    | 54                                   | 91          |
| " , Oil Well #22, Pool XXII               | "                    | 65                                   | 91          |
| Ishimbay                                  | Second Baku          | 157                                  | 88          |
| Iskine, Northern Section, Southeast Field | Emba                 | 15                                   | 78          |
| " , " , New Eastern Field                 | "                    | 16                                   | 78          |
| " , West Section                          | "                    | 26                                   | 78          |
| " , East Section                          | "                    | 27                                   | 78          |
| Izberbash                                 | Dagestan             | 80                                   | 110         |
| Kala, Kalinskaya                          | Baku                 | 130                                  | 71          |
| " , Upper Formation                       | "                    | 51                                   | 71          |
| " , Lower Formation                       | "                    | 53                                   | 71          |
| Kalinovka-Kopeykinskaya                   | Second Baku          | 161                                  | 86          |
| Kaluga                                    | Kubano-Chernomorskiy | 113                                  | 97          |
| Kara-Chukhur, Upper                       | Baku                 | 24                                   | 67          |

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## Alphabetical Index of Crude Oils

(Continued)

| Name of Crude                                   | Region               | GOST 912-46<br>Serial Number | Page |
|-------------------------------------------------|----------------------|------------------------------|------|
| Kara-Chukhur, Lower                             | Baku                 | 73                           | 67   |
| Karatonskaya                                    | Emba                 |                              | 75   |
| Karlinskaya                                     | Second Baku          | 144                          | 87   |
| Kasharskaya                                     | Emba                 | 3                            | 75   |
| Katangliyskaya                                  | Sakhalin             | 45                           | 102  |
| Kaya-Kent                                       | Dagestan             | 105                          | 110  |
| Keslerovskaya                                   | Kubano-Chernomorskiy | 119                          | 97   |
| Khadyzhenskaya, Light                           | "                    | 63                           | 96   |
| " , Heavy, Level III                            | "                    | 124                          | 98   |
| Khaudag                                         | Central Asia         | 156                          | 105  |
| Khodzhe-Gasanskaya                              | Baku                 | 35                           | 66   |
| Kimovskaya                                      | Fergana              | 131                          | 100  |
| Kinzebulstovskaya                               | Second Baku          | 148                          | 88   |
| Komsomol, Plant Mixture                         | Emba                 | 43                           | 82   |
| Komsomol, Aptian/Neocomian                      | "                    | 8                            | 82   |
| Koschagyl, Central Field, Jurassic              | "                    | 47                           | 80   |
| " , " , Resinous                                | "                    | 109                          | 81   |
| " , " , Sold by Liter                           | "                    | 118                          | 81   |
| " , Southeast Field                             | "                    | 50                           | 81   |
| " , Northwest Field                             | "                    | 67                           | 81   |
| Krasnokamsk                                     | Second Baku          | 151                          | 85   |
| Kulsarskaya, Central Section, IV Upper Jurassic | Emba                 |                              | 82   |
| " , " , XIX Middle Jurassic                     | "                    |                              | 83   |

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## Alphabetical Index of Crude Oils

(Continued)

| Name of Crude                                       |   | Region               | Serial Number | Page |
|-----------------------------------------------------|---|----------------------|---------------|------|
| Kulsarskaya, Central Section, XIXa, Middle Jurassic | " | Emba                 |               | 83   |
| "                                                   | " | "                    |               | 83   |
| "                                                   | " | "                    |               | 83   |
| "                                                   | " | "                    |               | 84   |
| Kura-Tsetse, Light                                  | " | Kubano-Chernomorskiy | 129           | 98   |
| Kusyapkulovskaya                                    | " | Second Baku          | 158           | 88   |
| Kutaissskaya                                        | " | Kubano-Chernomorskiy | 123           | 97   |
| Kuz'minovskaya                                      | " | Second Baku          | 147           | 87   |
| Kyurdakhany                                         | " | Baku                 | 111           | 69   |
| Lok-Batan, Paraffinic                               | " | Baku                 | 66            | 64   |
| "                                                   | " | "                    | 89            | 64   |
| "                                                   | " | "                    | 93            | 64   |
| Makat, Southeast Field, II Jurassic                 | " | Emba                 | 5             | 72   |
| "                                                   | " | "                    | 17            | 73   |
| "                                                   | " | "                    | 18            | 73   |
| "                                                   | " | "                    | 4             | 73   |
| "                                                   | " | "                    | 19            | 73   |
| "                                                   | " | "                    | 39            | 74   |
| "                                                   | " | "                    |               | 74   |
| Makhachkala                                         | " | Dagestan             | 128           | 110  |
| Malgobek, Heavy                                     | " | Grozny               | 88            | 92   |

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## Alphabetical Index of Crude Oils

(Continued)

| <u>Name of Crude</u>                  | <u>Region</u> | <u>GOST 912-46<br/>Serial Number</u> | <u>Page</u> |
|---------------------------------------|---------------|--------------------------------------|-------------|
| Malgobek, Light                       | Groznyy       | 127                                  | 92          |
| Mashtagi                              | Baku          | 107                                  | 70          |
| Muzhim-Biru                           | Groznyy       | 44                                   | 92          |
| Naphthalic, Paraffinic                | Kirovobad     | 49                                   | 109         |
| " , with high Paraffin Content        | "             | 87                                   | 109         |
| Nebit-Dag                             | Turkmenistan  | 102                                  | 111         |
| Nefteabad                             | Fergana       | 126                                  | 100         |
| Neftechala                            | Baku          | 90                                   | 68          |
| Nordvikskaya                          | Severnny      | 137                                  | 106         |
| Novostepanevskaya                     | Second Baku   | 162                                  | 86          |
| Okha, Pool III                        | Sakhalin      | 114                                  | 102         |
| " , Pool VII                          | "             | 116                                  | 102         |
| " , Pools XI and XII                  | "             | 122                                  | 103         |
| " , Pool XIII bis                     | "             | 134                                  | 103         |
| " , Pool XIV                          | "             | 81                                   | 91          |
| Oysangurskaya, Oil Well #5, Pool XXII | Groznyy       | 69                                   | 92          |
| " , Oil Well #41, Pool XXII           | "             |                                      |             |
| Palvantashskaya                       | Fergana       | 125                                  | 99          |
| Pirsagat                              | Baku          | 70                                   | 65          |
| " , Oil Well #10                      | "             | 103                                  | 65          |

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## Alphabetical Index of Crude Oils

(Continued)

| <u>Name of Crude</u>              | <u>Region</u>        | <u>GOST 912-46<br/>Serial Number</u> | <u>Page</u> |
|-----------------------------------|----------------------|--------------------------------------|-------------|
| Polaznenskaya                     |                      |                                      |             |
| Putu, Oily                        | Second Baku          | 136                                  | 85          |
|                                   | Baku                 | 94                                   | 68          |
| Ramaninskaya                      | Baku                 | 33                                   | 66          |
| Sagiz, East Field, Lower Aptian   | Emba                 | 1                                    | 75          |
| " " " " Upper Aptian              | "                    | 10                                   | 76          |
| " " " " IV Neocomian              | "                    | 40                                   | 76          |
| " " " " Middle Jurassic           | "                    | 58                                   | 76          |
| " " South Field, III Lower Aptian | "                    | 11                                   | 76          |
| " " " " Middle Jurassic           | "                    | 21                                   | 77          |
| " " " " IV Neocomian              | "                    | 59                                   | 77          |
| " " " " XIII-XIV Middle Jurassic  | "                    |                                      | 77          |
| " " West Field                    | "                    |                                      | 77          |
| Sed'iel'skaya                     | Ukhta                | 41                                   | 77          |
| Severokamskaya                    | Second Baku          | 141                                  | 104         |
| Shirokaya Balka, Light            | Kubano-Chernomorskiy | 135                                  | 85          |
| Shor-su, Pook K (VIII)            | Fergana              | 83                                   | 96          |
| " " Pool L (VII)                  | "                    | 85                                   | 100         |
| " " Pool M (V)                    | "                    | 154                                  | 101         |
| Shugurovo                         | Second Baku          | 160                                  | 101         |
| Siazanskiy                        | Baku                 | 36                                   | 89          |
| Skhodnitsa                        | Western Ukraine      | 38                                   | 66          |
|                                   |                      |                                      | 107         |

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## Alphabetical Index of Crude Oils

(Continued)

| Name of Crude         | Region       | GOST 912-46<br>Serial Number | Page |
|-----------------------|--------------|------------------------------|------|
| Stavropol' Devonian   | Second Baku  | 153                          | 87   |
| Sulu-Tepinskaya       | Baku         | 100                          | 70   |
| Surakhany, White      | "            | 9                            | 63   |
| " , Select            | "            | 23                           | 63   |
| " , Oily              | "            | 37                           | 63   |
| " , Ordinary          | "            | 52                           | 63   |
| " , Heavy             | "            | 57                           | 64   |
| Syzran'               | Second Baku  | 152                          | 86   |
| Tash-Kalinskaya       | Groznyy      | 56                           | 94   |
| Termen'-Yelginskaya   | Second Baku  | 159                          | 88   |
| Tymazy, Carboniferous | "            | 139                          | 89   |
| " , Tournaisian       | "            | 149                          | 89   |
| " , Devonian          | "            | 150                          | 89   |
| Tyulegenskaya         | Emba         |                              | 75   |
| Uch-Kizyl             | Central Asia | 145                          | 105  |
| Ukhta, Oil Field #I   | Ukhta        | 155                          | 104  |
| " , Oil Field #III    | "            | 142                          | 104  |
| Voznesenskaya, Heavy  | Groznyy      | 91                           | 93   |
| " , Light             | "            | 117                          | 93   |

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Alphabetical Index of Crude Oils

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| <u>Name of Crude</u> | <u>Region</u> | <u>GOST 912-46<br/>Serial Number</u> | <u>Page</u> |
|----------------------|---------------|--------------------------------------|-------------|
| Yasamal'skaya        | Baku          | 55                                   | 68          |
| Yarega               | Ukhta         | 140                                  | 104         |
| Zheldybayetskaya     | Emba          | 6                                    | 74          |
| Zhengel'dinskaya     | "             | 46                                   | 74          |
| Zykh, Upper          | Baku          | 25                                   | 67          |
| " , Lower            | "             | 74                                   | 67          |

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## APPENDIX A

Summary of Crude Oil Specifications, USSR

|                                           | <u>Group I</u> | <u>Group II</u> | <u>Group III</u> | <u>Group IV</u> | <u>Group V</u> | <u>Total</u> |
|-------------------------------------------|----------------|-----------------|------------------|-----------------|----------------|--------------|
| Range of Gasoline Yield (Percent)         | 0              | 0.0/10.0        | 10.1/20.0        | 20.1/30.0       | Over 30.1      | 175          |
| Number of Crude Oils                      | 37             | 77              | 42               | 15              | 4              | 100          |
| Percent of Total Crudes                   | 21.2           | 44.0            | 24.0             | 8.6             | 2.2            |              |
| Gasoline                                  |                |                 |                  |                 |                |              |
| Yield, Wt. Percent (Average)              | 0.0            | 4.6             | 15.7             | 24.2            | 41.6           |              |
| Qualitative Index <u>a</u> / <sup>*</sup> |                |                 |                  |                 |                |              |
| 1                                         |                | 31              | 3                | 0               | 1              | 35           |
| 2                                         |                | 21              | 5                | 1               | 0              | 27           |
| 3                                         |                | 25              | 34               | 14              | 3              | 76           |
| 0                                         | 37             |                 |                  |                 |                | 37           |
| Kerosene                                  |                |                 |                  |                 |                |              |
| Yield, Percent (Estimated Average)        | 19.1           | 29.0            | 26.4             | 29.0            | 27.5           |              |
| Qualitative Index <u>a</u> / <sup>*</sup> |                |                 |                  |                 |                |              |
| 1                                         | 33             | 30              | 7                | 4               |                | 74           |
| 2                                         | 3              | 19              | 2                |                 | 3              | 27           |
| 3                                         | 1              | 25              | 33               | 9               | 1              | 69           |
| Oil Fraction                              |                |                 |                  |                 |                |              |
| Qualitative Index <u>a</u> / <sup>*</sup> |                |                 |                  |                 |                |              |
| 1                                         | 20             | 24              | 7                | 5               | 0              | 56           |
| 2                                         | 10             | 33              | 24               | 8               | 2              | 77           |
| 3                                         | 7              | 17              | 10               | 1               | 1              | 36           |
| 0                                         |                |                 |                  |                 | 1              | 1            |

\* Footnotes follow on p. 12.

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## Summary of Crude Oil Specifications, USSR

(Continued)

| Oil Fraction (Continued)                        |   | Group I                                    | Group II                    | Group III                            | Group IV | Group V | Total |
|-------------------------------------------------|---|--------------------------------------------|-----------------------------|--------------------------------------|----------|---------|-------|
| Group b/<br>1<br>2<br>3                         |   | 22                                         | 24                          | 4                                    | 2        | 1       | 53    |
|                                                 |   | 11                                         | 20                          | 4                                    | 2        | 2       | 39    |
|                                                 |   | 1                                          | 25                          | 31                                   | 8        | 1       | 86    |
|                                                 |   |                                            |                             |                                      |          |         |       |
| Distillate                                      |   |                                            |                             |                                      |          |         |       |
| Total Yield to 300°C, Percent (Average)         |   | 19.3                                       | 34.3                        | 40.7                                 | 51.2     | 68.0    |       |
| Resin                                           |   |                                            |                             |                                      |          |         |       |
| Sub-Class (Percent)                             |   |                                            |                             |                                      |          |         |       |
| 1 (17 and under)<br>2 (18 to 35)<br>3 (Over 35) |   | 10                                         | 13                          | 4                                    | 5        | 2       | 34    |
|                                                 |   | 14                                         | 27                          | 16                                   | 6        | 1       | 64    |
|                                                 |   | 10                                         | 29                          | 19                                   | 1        | 1       | 60    |
| Sulfur                                          |   |                                            |                             |                                      |          |         |       |
| Class (Percent)                                 |   |                                            |                             |                                      |          |         |       |
| 1 (0.5 and under)<br>2 (Over 0.5)               |   | 30                                         | 60                          | 24                                   | 12       | 4       | 130   |
|                                                 |   | 4                                          | 9                           | 14                                   |          |         | 27    |
| a/ Qualitative Index:                           |   |                                            |                             |                                      |          |         |       |
|                                                 | 1 | Gasoline<br>ON 72 and above                | Kerosene<br>ON 40 and above | Oil Fraction<br>Sp gr 0.903 and less |          |         |       |
|                                                 | 2 | ON 65/71                                   | ON 30/39                    | Sp gr 0.904/0.927                    |          |         |       |
|                                                 | 3 | ON below 65                                | ON below 30                 | Sp gr above 0.927                    |          |         |       |
| b/ Group                                        |   |                                            |                             |                                      |          |         |       |
|                                                 | 1 | Oil Fraction<br>Pour point -16°C and below |                             |                                      |          |         |       |
|                                                 | 2 | Pour point -15°C to +20°C                  |                             |                                      |          |         |       |
|                                                 | 3 | Pour point above +20°C                     |                             |                                      |          |         |       |

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## APPENDIX B

### Regional Summary Tables

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| <u>Region</u>                    | <u>Page</u> |
|----------------------------------|-------------|
| 1. Baku                          | 15          |
| 2. Kubano-Chernomorskiy          | 18          |
| 3. Dagestan                      | 21          |
| 4. Grozny                        | 24          |
| 5. Western Region of the Ukraine | 27          |
| 6. Fergana                       | 30          |
| 7. Central Asia South            | 33          |
| 8. Kirovobad                     | 36          |
| 9. Emba                          | 39          |
| 10. Second Baku                  | 42          |
| 11. Sakhalin                     | 45          |
| 12. Ukhta                        | 48          |
| 13. Turkmenistan                 | 51          |
| 14. Severnyy                     | 54          |
| 15. Kamchatka                    | 57          |

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## 1. Summary of Crude Oil Specifications by Oil Regions

Baku

| Product                    | Group I          |                  |   | Group II         |                  |  | Group III        |                  |  | Group IV         |                  |  | Group V          |                  |  |
|----------------------------|------------------|------------------|---|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                            | Number of Crudes | Percent of Total |   | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
|                            | Range            | Average          |   | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  |
| Gasoline                   |                  |                  |   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Percent of Yield           | Nil              | Nil              |   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Octane Number              |                  |                  |   | 0.0/10.0         | 5.1              |  | 10.1/20.0        | 15.3             |  | 20.1/30.0        | 25.0             |  | Over 30.1        | 30.5             |  |
| Qualitative Index a/*      |                  |                  |   | 60/77            | 69.3             |  | 61.5/67.5        | 64.5             |  |                  | 63.0             |  |                  | 75.5             |  |
| 1                          |                  |                  |   |                  | 12               |  |                  |                  |  |                  |                  |  |                  | 1                |  |
| 2                          |                  |                  |   |                  | 7                |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                          |                  |                  |   |                  | 8                |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 0                          |                  |                  | 3 |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Octane Number, Leaded      |                  |                  |   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Kerosene                   |                  |                  |   | 80/92            | 87.3             |  |                  | 86.0             |  |                  |                  |  |                  | 92.5             |  |
| Estimated Percent of Yield |                  |                  |   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Octane Number              | 14/22            | 19               |   | 24.8/46.6        | 33.5             |  | 20/40.3          | 31.2             |  |                  | 31               |  |                  | 65.5             |  |
| Qualitative Index a/       | 40/46            | 43               |   | 26@20/51 b/*     | 35.0             |  | 24/42            | 35.0             |  |                  | 45               |  |                  | Less than 36.0   |  |
| 1                          |                  |                  |   |                  | 11               |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                          |                  |                  |   |                  | 7                |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                          |                  |                  |   |                  | 9                |  |                  |                  |  |                  |                  |  |                  |                  |  |

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## 1. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Oil Fraction                   | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|--------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                                | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                                | Range            |                  |         | Range            |                  |         | Range            |                  |         | Range            |                  |         | Range            |                  |         |
| Product                        | 3                | (8.4%)           |         | 27               | (75%)            |         | 4                | (11%)            |         | 1                | (2.8%)           |         | 1                | (2.8%)           |         |
| Qualitative Index a/*          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              | 1                |                  |         |                  | 6                |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              | 2                |                  |         |                  | 13               |         |                  | 3                |         |                  |                  |         |                  |                  |         |
| 0                              |                  |                  |         |                  | 8                |         |                  | 1                |         |                  | 1                |         |                  |                  |         |
| Group c/*                      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              | 3                |                  |         |                  | 14               |         |                  | 3                |         |                  |                  |         |                  | 1                |         |
| 2                              |                  |                  |         |                  | 6                |         |                  |                  |         |                  | 1                |         |                  |                  |         |
| 3                              |                  |                  |         |                  | 7                |         |                  | 1                |         |                  |                  |         |                  |                  |         |
| Distillate                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Total Yield to 300°C (Percent) | 14/22            | 19.0             |         | 24/52            | 39               |         | 36/59            | 46.5             |         |                  | 56.0             |         |                  |                  | 96.0    |

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## 1. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                      | Group I          |                     |              | Group II         |                  |       | Group III        |                  |       | Group IV         |                  |       | Group V          |                  |       |
|------------------------------|------------------|---------------------|--------------|------------------|------------------|-------|------------------|------------------|-------|------------------|------------------|-------|------------------|------------------|-------|
|                              | Number of Crudes | Percent of Total    | Range        | Number of Crudes | Percent of Total | Range | Number of Crudes | Percent of Total | Range | Number of Crudes | Percent of Total | Range | Number of Crudes | Percent of Total | Range |
| Resin                        | 3                | (8.4%)              |              | 27               | (75%)            |       | 4                | (11%)            |       | 1                | (2.8%)           |       | 1                | (2.8%)           |       |
| Sub-Class (Percent)          |                  |                     |              |                  |                  |       |                  |                  |       |                  |                  |       |                  |                  |       |
| 1 (17 and under)             |                  |                     |              |                  | 3                |       |                  | 1                |       |                  | 1                |       |                  | 1                |       |
| 2 (18 to 35)                 |                  |                     |              |                  | 12               |       |                  | 3                |       |                  |                  |       |                  |                  |       |
| 3 (over 35)                  |                  |                     |              |                  | 12               |       |                  |                  |       |                  |                  |       |                  |                  |       |
| Residue Less Resin (Percent) | 31/52            | 43.3                |              | 20/51            | 40.63            |       | 16/37            | 26.9             |       |                  | 34.0             |       |                  | 4.0              |       |
| Sulfur                       |                  |                     |              |                  |                  |       |                  |                  |       |                  |                  |       |                  |                  |       |
| Class (Percent)              |                  |                     |              |                  |                  |       |                  |                  |       |                  |                  |       |                  |                  |       |
| 1 (0.5 and under)            |                  |                     |              |                  | 27               |       |                  | 4                |       |                  | 1                |       |                  | 1                |       |
| 2 (over 0.5)                 |                  |                     |              |                  |                  |       |                  |                  |       |                  |                  |       |                  |                  |       |
| a. Qualitative Index:        | Gasoline         | Kerosene            | Oil Fraction |                  |                  |       |                  |                  |       |                  |                  |       |                  |                  |       |
| 1 ON 72 and above            | ON 40 and above  | Sp gr .903 and less |              |                  |                  |       |                  |                  |       |                  |                  |       |                  |                  |       |
| 2 ON 65/71                   | ON 30/39         | Sp gr .904/.927     |              |                  |                  |       |                  |                  |       |                  |                  |       |                  |                  |       |
| 3 ON below 65                | ON below 30      | Sp gr above .927    |              |                  |                  |       |                  |                  |       |                  |                  |       |                  |                  |       |
| 0 No gasoline                |                  | No oil fraction     |              |                  |                  |       |                  |                  |       |                  |                  |       |                  |                  |       |

b. Does not include 1 Crude @ 0 Octane No.

c. Group 1 Four point -16°C and below  
 2 Four point -15°C to +20°C  
 3 Four point above +20°C

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## 2. Summary of Crude Oil Specifications by Oil Regions

Kubano-Chernomorskiy

| Product                    | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|----------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                            | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                            | Range            | (14.2%)          |         | Range            | (42.8%)          |         | Range            | (28.6%)          |         | Range            | (7.2%)           |         | Range            | (7.2%)           |         |
| Gasoline                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Percent of Yield           | Nil              | Nil              |         | 0.0/10.0         | 4.5              |         | 10.1/20.0        | 16.5             |         | 20.1/30.0        | 21.5             |         | Over 30.1        | 31.0             |         |
| Octane Number              |                  |                  |         | 62/76            | 70.0             |         | 62.5/69          | 65.4             |         |                  | 1025.0           |         |                  | 1030.0           |         |
| Qualitative Index a/*      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  | 3                |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  | 2                |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  | 1                |         |                  |                  |         |                  | 1                |         |                  |                  |         |
| 0                          |                  |                  | 2       |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number, Lead        |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Kerosene                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Estimated Percent of Yield | 11/17            | 14.0             |         | 22/32            | 27.0             |         | 22/27            | 24.5             |         |                  | 1021.5           |         |                  | 1025.0           |         |
| Octane Number              | 50/56            | 53.0             |         | 29/50            | 41.5             |         | 20/57            | 36.0             |         |                  | 1025.0           |         |                  | 1030.0           |         |
| Qualitative Index a/       |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  | 3                |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  | 2                |         |                  | 2                |         |                  |                  |         |                  |                  |         |                  | 1                |         |
| 3                          |                  |                  |         |                  | 1                |         |                  |                  |         |                  | 1                |         |                  |                  |         |

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2. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Oil Fraction                   | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|--------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                                | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
| Product                        | 2                | (14.2%)          |         | 6                | (42.8%)          |         | 4                | (28.6%)          |         | 1                | (7.2%)           |         | 1                | (7.2%)           |         |
| Qualitative Index a/*          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  | 2                |         |                  | 2                |         |                  | 1                |         |                  | 1                |         |
| 2                              | 2                |                  |         |                  | 3                |         |                  | 2                |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Group b/*                      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  | 2                |         |                  | 1                |         |                  |                  |         |                  | 1                |         |
| 2                              |                  |                  |         |                  |                  |         |                  | 3                |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Distillate                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Total Yield to 300°C (Percent) | 11/17            | 14.0             |         | 23/39            | 31.0             |         | 38/42            | 41.0             |         |                  | 10/13            |         |                  | 10/13            |         |

\* Footnotes follow on p. 20.

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## 2. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                      | Group I                                                                       |                                                        |                                                                                               | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                              | Number of Crudes                                                              | Percent of Total                                       | Average                                                                                       | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                              |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Resin                        | 2                                                                             | (14.2%)                                                |                                                                                               | 6                | (42.8%)          |         | 4                | (28.6%)          |         | 1                | (7.2%)           |         | 1                | (7.2%)           |         |
| Sub-Class (Percent)          |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 (17 and under)             |                                                                               |                                                        |                                                                                               |                  | 1                |         |                  | 2                |         |                  | 1                |         |                  |                  |         |
| 2 (18 to 35)                 | 2                                                                             |                                                        |                                                                                               |                  | 4                |         |                  | 2                |         |                  |                  |         |                  |                  |         |
| 3 (over 35)                  |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  | 1                |         |
| Residue Less Resin (Percent) | 23/29                                                                         | 26.3                                                   |                                                                                               | 35/47            | 42.04            |         | 33/42            | 38.4             |         |                  | 41.0             |         |                  |                  | 28.2    |
| Sulfur                       |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Class (Percent)              |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 (0.5 and under)            | 2                                                                             |                                                        |                                                                                               |                  | 5                |         |                  | 4                |         |                  | 1                |         |                  |                  |         |
| 2 (over 0.5)                 |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| a. Qualitative Index:        | Gasoline<br>1 ON 72 and above<br>2 ON 65/71<br>3 ON below 65<br>0 No gasoline | Kerosene<br>ON 40 and above<br>ON 30/39<br>ON below 30 | Oil Fraction<br>Sp gr .903 and less<br>Sp gr .904/.927<br>Sp gr above .927<br>No oil fraction |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| b. Group 1                   | Oil Fraction<br>Pour point -16°C and below                                    |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                            | Pour point -15°C to +20°C                                                     |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                            | Pour point above +20°C                                                        |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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## 3. Summary of Crude Oil Specifications by Oil Regions

## Dagestan

| Product                    | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|----------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                            | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                            | Range            |                  |         | Range            |                  |         | Range            |                  |         | Range            |                  |         | Range            |                  |         |
| Gasoline                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Percent of Yield           | Nil              | Nil              |         | 0.0/10.0         |                  |         | 10.1/20.0        | 11.0             |         | 20.1/30.0        | 21.0             |         | Over 30.1        | 35.0             |         |
| Octane Number              |                  |                  |         |                  |                  |         |                  | 61.0             |         |                  | 60.0             |         |                  | 55.0             |         |
| Qualitative Index a/*      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  |                  |         | 1                | (25%)            |         | 2                | (50%)            |         | 1                | (25%)            |         |
| 2                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number, Lead        |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Kerosene                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Estimated Percent of Yield |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number              |                  |                  |         |                  |                  |         |                  | 24.0             |         | 23/26            | 24.5             |         |                  | 10.0             |         |
| Qualitative Index a/       |                  |                  |         |                  |                  |         |                  | 40.0             |         | 15/15            | 15.0             |         |                  | 23.0             |         |
| 1                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

\* Footnotes follow on p. 23.

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### 33. Summary of Crude Oil Specifications by Oil Regions

(Continued)

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\* Footnotes follow on p. 23.

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3. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                      | Group I          |                     |              | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|------------------------------|------------------|---------------------|--------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                              | Number of Crudes | Percent of Total    | Average      | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
| Resin                        |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Sub-Class (Percent)          |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 (17 and under)             |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 (18 to 35)                 |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3 (over 35)                  |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Residue Less Resin (Percent) |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Sulfur                       |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Class (Percent)              |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 (0.5 and under)            |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 (over 0.5)                 |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| a. Qualitative Index:        | Gasoline         | Kerosene            | Oil Fraction |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 ON 72 and above            | ON 40 and above  | Sp gr .903 and less |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 ON 65/71                   | ON 30/39         | Sp gr .904/.927     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3 ON below 65                | ON below 30      | Sp gr above .927    |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0 No gasoline                |                  | No oil fraction     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| b. Group 1                   | Oil Fraction     |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 Pour point -16°C and below |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3 Pour point -15°C to +20°C  |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3 Pour point above +20°C     |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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## 4. Summary of Crude Oil Specifications by Oil Regions

Groznyy

| Product                    | Group I          |                  |  | Group II         |                  |  | Group III        |                  |  | Group IV         |                  |  | Group V          |                  |  |
|----------------------------|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                            | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
|                            | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  |
| Gasoline                   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Percent of Yield           | Nil              | Nil              |  | 0.0/10.0         | 1.6              |  | 10.1/20.0        | 17.6             |  | 20.1/30.0        | 26.5             |  | Over 30.1        |                  |  |
| Octane Number              |                  |                  |  | 51.5/82          | 74.4             |  | 52.5/60          | 55.3             |  | 58/60            | 58.7             |  |                  |                  |  |
| Qualitative Index a/*      | 1                | (5%)             |  | 10               | (50%)            |  | 6                | (30%)            |  | 3                | (15%)            |  | 0                |                  |  |
| 1                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 0                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Octane Number, Leaded      |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Kerosene                   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Estimated Percent of Yield | 1011             |                  |  | 17.6/27          | 22.2             |  | 21/26            | 23.0             |  | 20.5/25          | 22.2             |  |                  |                  |  |
| Octane Number              | 53               |                  |  | 22/54            | 38.1             |  | 15/29 b/*        | 22.0             |  | 41/44 c/*        | 43.0             |  |                  |                  |  |
| Qualitative Index a/       | 1                |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |

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## 4. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                        | Group I          |                  |  | Group II         |                  |  | Group III        |                  |  | Group IV         |                  |  | Group V          |                  |  |
|--------------------------------|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                                | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
|                                | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  |
| Oil Fraction                   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Qualitative Index a/*          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 0                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Group d/*                      |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Distillate                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Total Yield to 300°C (Percent) | 1011             |                  |  | 18/32            | 24.4             |  | 29/46            | 38.7             |  | 42/55            | 49.0             |  |                  |                  |  |

\* Footnotes follow on p. 26.

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4. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                                     | Group I                    |                  |                     | Group II         |                  |  | Group III        |                  |  | Group IV         |                  |  | Group V          |                  |  |
|---------------------------------------------|----------------------------|------------------|---------------------|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                                             | Number of Crudes           | Percent of Total |                     | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
|                                             | Range                      | Average          |                     | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  |
| Resin                                       | 1                          | (5%)             |                     | 10               | (50%)            |  | 6                | (30%)            |  | 3                | (15%)            |  | 0                |                  |  |
| Sub-Class (Percent)                         |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1 (17 and under)                            | 1                          |                  |                     | 6                |                  |  | 5                |                  |  | 2                |                  |  |                  |                  |  |
| 2 (18 to 35)                                |                            |                  |                     | 4                |                  |  | 1                |                  |  | 1                |                  |  |                  |                  |  |
| 3 (over 35)                                 |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Residue Less Resin (Percent)                | 61/4                       |                  |                     | 46.0             |                  |  | 28/48            |                  |  | 33/35            |                  |  | 34.6             |                  |  |
| Sulfur                                      |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Class (Percent)                             |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1 (0.5 and under)                           | 1                          |                  |                     | 10               |                  |  | 6                |                  |  | 3                |                  |  |                  |                  |  |
| 2 (over 0.5)                                |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| a. Qualitative Index:                       | Gasoline                   | Kerosene         | Oil Fraction        |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                                           | ON 72 and above            | ON 40 and above  | Sp gr .903 and less |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                                           | ON 65/71                   | ON 30/39         | Sp gr .904/.927     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                                           | ON below 65                | ON below 30      | Sp gr above .927    |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 0                                           | No gasoline                |                  | No oil fraction     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| b. Does not include 1 Crude at 0 Octane No. |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| c. Does not include 1 Crude at 2 Octane No. |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| d. Group 1                                  | Oil Fraction               |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                                           | Four point -16°C and below |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                                           | Four point -15°C to +20°C  |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
|                                             | Four point above +20°C     |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |

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5. Summary of Crude Oil Specifications by Oil Regions  
Western Region of the Ukraine

| Product                    | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|----------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                            | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                            |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Gasoline                   | 0                |                  |         | 2                | (50%)            |         | 1                | (25%)            |         | 0                |                  |         | 1                | (25%)            |         |
| Percent of Yield           |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number              | Nil              | Nil              |         | 0.0/10.0         | 3.3              |         | 10.1/20.0        | 12.0             |         | 20.1/30.0        |                  |         | Over 30.1        | 66.0             |         |
| Qualitative Index a/*      |                  |                  |         | 60/60            | 60.0             |         |                  | 60.0             |         |                  |                  |         |                  | 55.0             |         |
| 1                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number, Lead        |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Kerosene                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Estimated Percent of Yield |                  |                  |         | 47.5/54          | 50.8             |         |                  | 33.0             |         |                  |                  |         |                  | 9.0              |         |
| Octane Number              |                  |                  |         | 1032 b/*         | 32.0             |         |                  | 26.0             |         |                  |                  |         |                  | 30.0             |         |
| Qualitative Index a/       |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
|                            |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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## 5. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Oil Fraction                   | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|--------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                                | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
| Qualitative Index a/*          | 0                |                  |         | 2                | (50%)            |         | 1                | (25%)            |         | 0                |                  |         | 1                | (25%)            |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Group c/*                      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Distillate                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Total Yield to 300°C (Percent) |                  |                  |         | 52/56            | 54.0             |         |                  | 45.0             |         |                  |                  |         |                  | 75.0             |         |

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## 5. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                      | Group I          |                  |         | Group II         |                  |         | Group III           |                  |         | Group IV         |                  |         | Group V          |                  |         |
|------------------------------|------------------|------------------|---------|------------------|------------------|---------|---------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                              | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes    | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                              |                  |                  |         |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| Resin                        | 0                |                  |         | 2                | (50%)            |         | 1                   | (25%)            |         | 0                |                  |         | 1                | (25%)            |         |
| Sub-Class (Percent)          |                  |                  |         |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| 1 (17 and under)             |                  |                  |         |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  | 1       |
| 2 (18 to 35)                 |                  |                  |         |                  | 2                |         |                     | 1                |         |                  |                  |         |                  |                  |         |
| 3 (over 35)                  |                  |                  |         |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| Residue Less Resin (Percent) |                  |                  |         | 33/35            | 34.25            |         |                     | 38.5             |         |                  |                  |         |                  |                  | 23.2    |
| Sulfur                       |                  |                  |         |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| Class (Percent)              |                  |                  |         |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| 1 (0.5 and under)            |                  |                  |         |                  | 2                |         |                     | 1                |         |                  |                  |         |                  |                  | 1       |
| 2 (over 0.5)                 |                  |                  |         |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| a. Qualitative Index:        | Gasoline         |                  |         | Kerosene         |                  |         | Oil Fraction        |                  |         |                  |                  |         |                  |                  |         |
| 1                            | ON 72 and above  |                  |         | ON 40 and above  |                  |         | Sp gr .903 and less |                  |         |                  |                  |         |                  |                  |         |
| 2                            | ON 65/71         |                  |         | ON 30/39         |                  |         | Sp gr .904/.927     |                  |         |                  |                  |         |                  |                  |         |
| 3                            | ON below 65      |                  |         | ON below 30      |                  |         | Sp gr above .927    |                  |         |                  |                  |         |                  |                  |         |
| 0                            | No gasoline      |                  |         |                  |                  |         | No oil fraction     |                  |         |                  |                  |         |                  |                  |         |

b. Does not include 1 Crude @ 0 Octane No.

## Oil Fraction

- c. Group 1 Four point -16°C and below  
 2 Four point -15°C to +20°C  
 3 Four point above +20°C

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## 6. Summary of Crude Oil Specifications by Oil Regions

Fergana

| Product                        | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|--------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                                | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                                | Range            |                  |         | Range            |                  |         | Range            |                  |         | Range            |                  |         | Range            |                  |         |
| Gasoline                       |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Percent of Yield               | Nil              | Nil              |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number                  |                  |                  |         | 0.0/10.0         | 7.7              |         | 10.1/20.0        | 13.8             |         | 20.1/30.0        | 21.0             |         | Over 30.1        |                  |         |
| Qualitative Index $\bar{a}$ /* |                  |                  |         | 50/55            | 52.5             |         | 41/55.5          | 51.0             |         |                  | 1@54.0           |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number, Lead            |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Kerosene                       |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Estimated Percent of Yield     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number                  |                  |                  |         | 27/33            | 30.0             |         | 21/31.2          | 26.5             |         |                  | 1@30.0           |         |                  |                  |         |
| Qualitative Index $\bar{a}$ /* |                  |                  |         | 20/27            | 24.0             |         | 12/28            | 23.0             |         |                  | 1@ 9.0           |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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6. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Oil Fraction                   | Group I                |                        |         | Group II               |                        |         | Group III              |                        |         | Group IV               |                        |         | Group V                |                        |         |
|--------------------------------|------------------------|------------------------|---------|------------------------|------------------------|---------|------------------------|------------------------|---------|------------------------|------------------------|---------|------------------------|------------------------|---------|
|                                | Number<br>of<br>Crudes | Percent<br>of<br>Total | Average | Number<br>of<br>Crudes | Percent<br>of<br>Total | Average | Number<br>of<br>Crudes | Percent<br>of<br>Total | Average | Number<br>of<br>Crudes | Percent<br>of<br>Total | Average | Number<br>of<br>Crudes | Percent<br>of<br>Total | Average |
|                                |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |
| Product                        | Range                  |                        |         | Range                  |                        |         | Range                  |                        |         | Range                  |                        |         | Range                  |                        |         |
| Qualitative Index a/**         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |
| 1                              |                        |                        |         |                        | 1                      |         |                        | 3                      |         |                        | 1                      |         |                        |                        |         |
| 2                              |                        |                        |         |                        | 2                      |         |                        |                        |         |                        |                        |         |                        |                        |         |
| 3                              |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |
| 0                              |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |
| Group b/**                     |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |
| 1                              |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |
| 2                              |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |
| 3                              |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |
| Distillate                     |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |                        |                        |         |
| Total Yield to 300°C (Percent) |                        |                        |         | 35/43                  | 39.0                   |         | 33/45                  | 40.0                   |         |                        |                        | 1051    |                        |                        |         |

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## 6. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                      | Group I          |                     |              | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|------------------------------|------------------|---------------------|--------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                              | Number of Crudes | Percent of Total    | Average      | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
| Resin                        | 0                |                     |              | 3                | (30%)            |         | 6                | (60%)            |         | 1                | (10%)            |         | 0                |                  |         |
| Sub-Class (Percent)          |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 (17 and under)             |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 (18 to 35)                 |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3 (over 35)                  |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Residue Less Resin (Percent) |                  |                     |              | 23/36            | 1                | 29.35   | 26/52            | 40.0             |         |                  |                  | 37.7    |                  |                  |         |
| Sulfur                       |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Class (Percent)              |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 (0.5 and under)            |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 (over 0.5)                 |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| a. Qualitative Index:        | Gasoline         | Kerosene            | Oil Fraction |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 ON 72 and above            | ON 40 and above  | Sp gr .903 and less |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 ON 65/71                   | ON 30/39         | Sp gr .904/.927     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3 ON below 65                | ON below 30      | Sp gr above .927    |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0 No gasoline                |                  | No oil fraction     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| b. Group 1                   | Oil Fraction     |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 Four point -16°C and below |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3 Four point -15°C to +20°C  |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3 Four point above +20°C     |                  |                     |              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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## 7. Summary of Crude Oil Specifications by Oil Regions

## Central Asia South

| Product                                       | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|-----------------------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                                               | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Gasoline                                      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Percent of Yield                              | Nil              | Nil              |         | 0.0/10.0         | 3.5              |         | 10.1/20.0        |                  |         | 20.1/30.0        |                  |         | Over 30.1        |                  |         |
| Octane Number                                 |                  |                  |         |                  | 55.5             |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Qualitative Index <sup>a</sup> / <sub>*</sub> |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                                             |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                                             |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                                             |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                                             |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number, Leaded                         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Kerosene                                      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Estimated Percent of Yield                    |                  |                  |         | 10/17            | 13.5             |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number                                 |                  |                  |         | 27/32            | 29.5             |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Qualitative Index <sup>a</sup> / <sub>*</sub> |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                                             |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                                             |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                                             |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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7. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                        | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|--------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                                | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                                |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Oil Fraction                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Qualitative Index a/*          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Group b/*                      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Distillate                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Total Yield to 300°C (Percent) |                  |                  |         | 12/22            |                  | 17.0    |                  |                  |         |                  |                  |         |                  |                  |         |

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## 7. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                      | Group I                    |                  |       | Group II         |                  |         | Group III           |                  |         | Group IV         |                  |         | Group V          |                  |         |
|------------------------------|----------------------------|------------------|-------|------------------|------------------|---------|---------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                              | Number of Crudes           | Percent of Total | Range | Number of Crudes | Percent of Total | Average | Number of Crudes    | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
| Resin                        |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| Sub-Class (Percent)          |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| 1 (17 and under)             |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| 2 (18 to 35)                 |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| 3 (over 35)                  |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| Residue Less Resin (Percent) |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| Sulfur                       |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| Class (Percent)              |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| 1 (0.5 and under)            |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| 2 (over 0.5)                 |                            |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| a. Qualitative Index:        | Gasoline                   |                  |       | Kerosene         |                  |         | Oil Fraction        |                  |         |                  |                  |         |                  |                  |         |
|                              | 1 ON 72 and above          |                  |       | ON 40 and above  |                  |         | Sp gr .903 and less |                  |         |                  |                  |         |                  |                  |         |
|                              | 2 ON 65/71                 |                  |       | ON 30/39         |                  |         | Sp gr .904/.927     |                  |         |                  |                  |         |                  |                  |         |
|                              | 3 ON below 65              |                  |       | ON below 30      |                  |         | Sp gr above .927    |                  |         |                  |                  |         |                  |                  |         |
|                              | 0 No gasoline              |                  |       |                  |                  |         | No oil fraction     |                  |         |                  |                  |         |                  |                  |         |
| b. Group 1                   | Oil Fraction               |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
|                              | Pour point -16°C and below |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| 2                            | Pour point -15°C to +20°C  |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |
| 3                            | Pour point above +20°C     |                  |       |                  |                  |         |                     |                  |         |                  |                  |         |                  |                  |         |

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## 8. Summary of Crude Oil Specifications by Oil Regions

Kirovobad

| Product                    | Group I          |                  |  | Group II         |                  |  | Group III        |                  |  | Group IV         |                  |  | Group V          |                  |  |
|----------------------------|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                            | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
|                            | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  |
| Gasoline                   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Percent of Yield           | Nil              | Nil              |  | 0.0/10.0         | 1.0              |  | 10.1/20.0        |                  |  | 20.1/30.0        |                  |  | Over 30.1        |                  |  |
| Octane Number              |                  |                  |  |                  | 83.0             |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Qualitative Index a/*      |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 0                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Octane Number, Leaded      |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Kerosene                   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Estimated Percent of Yield |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Octane Number              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Qualitative Index a/       |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |

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8. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                        | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|--------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                                | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                                |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Oil Fraction                   | 1                | (50%)            |         | 1                | (50%)            |         | 0                |                  |         | 0                |                  |         | 0                |                  |         |
| Qualitative Index a/*          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         | 1                |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Group b/*                      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         | 1                |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Distillate                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Total Yield to 300°C (Percent) |                  |                  | 36.0    |                  |                  | 32.5    |                  |                  |         |                  |                  |         |                  |                  |         |

\* Footnotes follow on p. 38.

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8. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                      | Group I                     |                   |         | Group II         |                  |         | Group III        |                     |         | Group IV         |                  |         | Group V          |                  |         |
|------------------------------|-----------------------------|-------------------|---------|------------------|------------------|---------|------------------|---------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                              | Number of Crudes            | Percent of Total  | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total    | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                              |                             |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| Resin                        | 1                           | (50%)             |         | 1                | (50%)            |         | 0                |                     |         | 0                |                  |         | 0                |                  |         |
| Sub-Class (Percent)          |                             |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| 1 (17 and under)             |                             |                   |         | 1                |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| 2 (18 to 35)                 |                             |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| 3 (over 35)                  |                             |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| Residue Less Resin (Percent) |                             |                   | 47.3    |                  |                  | 51.2    |                  |                     |         |                  |                  |         |                  |                  |         |
| Sulfur                       |                             |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| Class (Percent)              |                             |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| 1 (0.5 and under)            |                             |                   |         | 1                |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| 2 (over 0.5)                 |                             |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| a. Qualitative Index:        | Gasoline                    | 1 ON 72 and above |         | Kerosene         | ON 40 and above  |         | Oil Fraction     | Sp gr .903 and less |         |                  |                  |         |                  |                  |         |
|                              | 2 ON 65/71                  |                   |         | ON 30/39         |                  |         | Sp gr .904/.927  |                     |         |                  |                  |         |                  |                  |         |
|                              | 3 ON below 65               |                   |         | ON below 30      |                  |         | Sp gr above .927 |                     |         |                  |                  |         |                  |                  |         |
|                              | 0 No gasoline               |                   |         |                  |                  |         | No oil fraction  |                     |         |                  |                  |         |                  |                  |         |
|                              |                             |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| b. Group 1                   | Oil Fraction                |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
|                              | Pour point -16°C and below  |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
|                              | 2 Pour point -15°C to +20°C |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |
| 3                            | Pour point above +20°C      |                   |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |

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## 9. Summary of Crude Oil Specifications by Oil Regions

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| Product                       | Group I          |                  | Group II         |                  | Group III         |                  | Group IV         |                  | Group V          |                  |
|-------------------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|------------------|------------------|
|                               | Number of Crudes | Percent of Total | Number of Crudes | Percent of Total | Number of Crudes  | Percent of Total | Number of Crudes | Percent of Total | Number of Crudes | Percent of Total |
| Gasoline                      | 24               | (49%)            | 15               | (30.6%)          | 4                 | (8.2%)           | 6                | (12.2%)          | 0                |                  |
| Percent of Yield              |                  |                  |                  |                  |                   |                  |                  |                  |                  |                  |
| Octane Number                 | Nil              | Nil              | 0.0/10.0         | 3.6              | 10.1/20.0         | 15.0             | 20.1/30.0        | 24.4             | Over 30.1        |                  |
| Qualitative Index <u>a/</u> * |                  |                  | 55/77.5          | 69.0             | 59.75             | 69.0             | 50/62.5          | 61.0             |                  |                  |
| 1                             |                  |                  |                  | 6                |                   | 2                |                  |                  |                  |                  |
| 2                             |                  |                  |                  | 6                |                   |                  |                  |                  |                  |                  |
| 3                             |                  |                  |                  | 3                |                   | 2                |                  | 6                |                  |                  |
| 0                             |                  | 24               |                  |                  |                   |                  |                  |                  |                  |                  |
| Octane Number, Leaded         |                  |                  | 1@90             |                  |                   |                  |                  |                  |                  |                  |
| Kerosene                      |                  |                  |                  |                  |                   |                  |                  |                  |                  |                  |
| Estimated Percent of Yield    | 9/30             | 20.0             | 20/43            | 27.2             | 28/33             | 30.2             | 21/27            | 36.0             |                  |                  |
| Octane Number                 | 37/51            | 45.5             | 23/35.5          | 36.7             | {1@10<br>3@23/40} | 24.5             | 17/30            | 23.3             |                  |                  |
| Qualitative Index <u>a/</u>   |                  |                  |                  |                  |                   |                  |                  |                  |                  |                  |
| 1                             |                  | 23               |                  | 4                |                   | 1                |                  |                  |                  |                  |
| 2                             |                  | 1                |                  | 6                |                   |                  |                  |                  |                  |                  |
| 3                             |                  |                  |                  | 2                |                   | 3                |                  | 4                |                  |                  |

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9. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                        | Group I          |                  | Group II         |                  | Group III        |                  | Group IV         |                  | Group V          |                  |
|--------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                                | Number of Crudes | Percent of Total | Number of Crudes | Percent of Total | Number of Crudes | Percent of Total | Number of Crudes | Percent of Total | Number of Crudes | Percent of Total |
| Oil Fraction                   | 24               | (49%)            | 15               | (30.6%)          | 4                | (8.2%)           | 6                | (12.2%)          | 0                |                  |
| Qualitative Index a/*          | Range            | Average          | Range            | Average          | Range            | Average          | Range            | Average          | Range            | Average          |
| 1                              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| 2                              |                  | 20               |                  | 14               |                  | 3                |                  | 4                |                  |                  |
| 3                              |                  | 4                |                  |                  |                  |                  |                  |                  |                  |                  |
| 0                              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Group b/*                      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| 1                              |                  | 13               |                  | 3                |                  | 1                |                  | 1                |                  |                  |
| 2                              |                  | 8                |                  | 6                |                  | 2                |                  | 3                |                  |                  |
| 3                              |                  |                  |                  | 2                |                  |                  |                  |                  |                  |                  |
| Distillate                     |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
| Total Yield to 300°C (Percent) | 9/30             | 20.0             | 21/48            | 33.0             | 42/50            | 45.0             | 55/64            | 60.0             |                  |                  |

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## 9. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Group I                   |                  |         | Group II         |                  |         | Group III        |                     |         | Group IV         |                  |         | Group V          |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|---------|------------------|------------------|---------|------------------|---------------------|---------|------------------|------------------|---------|------------------|------------------|---------|--------------|--|--|--|---------------------------------------|--|--|--|--------------|---------------------------|--|--|-----------------------|------------------------|--|--|-----------------|--|--|--|---------------------|--|--|--|---|-----------------|--|--|-----------------|--|--|--|---------------------|--|--|--|---|----------|--|--|----------|--|--|--|-----------------|--|--|--|---|-------------|--|--|----------|--|--|--|------------------|--|--|--|---|-------------|--|--|--|--|--|--|-----------------|--|--|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Number of Crudes          | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total    | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Range                     |                  |         | Range            |                  |         | Range            |                     |         | Range            |                  |         | Range            |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| Resin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| Sub-Class (Percent)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 1 (17 and under)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                           |                  | 10      |                  |                  | 9       |                  |                     | 1       |                  |                  | 4       |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 2 (18 to 35)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |                  | 9       |                  |                  | 1       |                  |                     | 2       |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 3 (over 35)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                           |                  | 2       |                  |                  | 1       |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| Residue Less Resin (Percent)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 41/80                     |                  | 63.25   | 43/69            |                  | 57.36   | 41.50            |                     | 46.06   | 35/59            |                  | 37.22   |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| Sulfur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                           |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| Class (Percent)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                           |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 1 (0.5 and under)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                           |                  | 21      |                  |                  | 11      |                  |                     | 3       |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 2 (over 0.5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| <table><tr><td colspan="4">Gasoline</td><td colspan="4">Kerosene</td><td colspan="4">Oil Fraction</td></tr><tr><td colspan="4">a. Qualitative Index:</td><td colspan="4">ON 40 and above</td><td colspan="4">Sp gr .903 and less</td></tr><tr><td>1</td><td>ON 72 and above</td><td></td><td></td><td>ON 40 and above</td><td></td><td></td><td></td><td>Sp gr .903 and less</td><td></td><td></td><td></td></tr><tr><td>2</td><td>ON 65/71</td><td></td><td></td><td>ON 30/39</td><td></td><td></td><td></td><td>Sp gr .904/.927</td><td></td><td></td><td></td></tr><tr><td>3</td><td>ON below 65</td><td></td><td></td><td>ON below</td><td></td><td></td><td></td><td>Sp gr above .927</td><td></td><td></td><td></td></tr><tr><td>0</td><td>No gasoline</td><td></td><td></td><td></td><td></td><td></td><td></td><td>No oil fraction</td><td></td><td></td><td></td></tr></table> |                           |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         | Gasoline     |  |  |  | Kerosene                              |  |  |  | Oil Fraction |                           |  |  | a. Qualitative Index: |                        |  |  | ON 40 and above |  |  |  | Sp gr .903 and less |  |  |  | 1 | ON 72 and above |  |  | ON 40 and above |  |  |  | Sp gr .903 and less |  |  |  | 2 | ON 65/71 |  |  | ON 30/39 |  |  |  | Sp gr .904/.927 |  |  |  | 3 | ON below 65 |  |  | ON below |  |  |  | Sp gr above .927 |  |  |  | 0 | No gasoline |  |  |  |  |  |  | No oil fraction |  |  |  |
| Gasoline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                           |                  |         | Kerosene         |                  |         |                  | Oil Fraction        |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| a. Qualitative Index:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                  |         | ON 40 and above  |                  |         |                  | Sp gr .903 and less |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ON 72 and above           |                  |         | ON 40 and above  |                  |         |                  | Sp gr .903 and less |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ON 65/71                  |                  |         | ON 30/39         |                  |         |                  | Sp gr .904/.927     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ON below 65               |                  |         | ON below         |                  |         |                  | Sp gr above .927    |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | No gasoline               |                  |         |                  |                  |         |                  | No oil fraction     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| <table><tr><td colspan="4">Oil Fraction</td></tr><tr><td colspan="4">b. Group 1 Pour point -16°C and below</td></tr><tr><td>2</td><td>Pour point -15°C to +20°C</td><td></td><td></td></tr><tr><td>3</td><td>Pour point above +20°C</td><td></td><td></td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                           |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         | Oil Fraction |  |  |  | b. Group 1 Pour point -16°C and below |  |  |  | 2            | Pour point -15°C to +20°C |  |  | 3                     | Pour point above +20°C |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| Oil Fraction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| b. Group 1 Pour point -16°C and below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Pour point -15°C to +20°C |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Pour point above +20°C    |                  |         |                  |                  |         |                  |                     |         |                  |                  |         |                  |                  |         |              |  |  |  |                                       |  |  |  |              |                           |  |  |                       |                        |  |  |                 |  |  |  |                     |  |  |  |   |                 |  |  |                 |  |  |  |                     |  |  |  |   |          |  |  |          |  |  |  |                 |  |  |  |   |             |  |  |          |  |  |  |                  |  |  |  |   |             |  |  |  |  |  |  |                 |  |  |  |

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## 10. Summary of Crude Oil Specifications by Oil Regions

## Second Baku

| Product                    | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|----------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                            | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
| Gasoline                   | 0                |                  |         | 6                | (30%)            |         | 14               | (70%)            |         | 0                |                  |         | 0                |                  |         |
| Percent of Yield           | Nil              | Nil              |         | 0.0/10.0         | 8.5              |         | 10.1/20.0        | 16.3             |         | 20.1/30.0        |                  |         | Over 30.1        |                  |         |
| Octane Number              |                  |                  |         | 45/65            | 54.5             |         | 48/60            | 54.2             |         |                  |                  |         |                  |                  |         |
| Qualitative Index a/ *     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  | 1                |         |                  | 1                |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  | 5                |         |                  | 13               |         |                  |                  |         |                  |                  |         |
| 0                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number, Lead        |                  |                  |         | 1080             |                  |         | 4030/90          |                  |         |                  |                  |         |                  |                  |         |
| Kerosene                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Estimated Percent of Yield |                  |                  |         | 22/28.5          | 25.4             |         | 19.5/28          | 22.8             |         |                  |                  |         |                  |                  |         |
| Octane Number              |                  |                  |         | 8/32             | 22.0             |         | 1052             | -- 21.5          |         |                  |                  |         |                  |                  |         |
| Qualitative Index a/       |                  |                  |         |                  |                  |         | 1305/28          |                  |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  | 1                |         |                  | 1                |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  | 5                |         |                  | 13               |         |                  |                  |         |                  |                  |         |

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10. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                        | Group I                |                        |       | Group II               |                        |         | Group III              |                        |         | Group IV               |                        |       | Group V                |                        |         |
|--------------------------------|------------------------|------------------------|-------|------------------------|------------------------|---------|------------------------|------------------------|---------|------------------------|------------------------|-------|------------------------|------------------------|---------|
|                                | Number<br>of<br>Crudes | Percent<br>of<br>Total | Range | Number<br>of<br>Crudes | Percent<br>of<br>Total | Average | Number<br>of<br>Crudes | Percent<br>of<br>Total | Average | Number<br>of<br>Crudes | Percent<br>of<br>Total | Range | Number<br>of<br>Crudes | Percent<br>of<br>Total | Average |
| Oil Fraction                   | 0                      |                        |       | 6                      | (30%)                  |         | 14                     | (70%)                  |         | 0                      |                        |       | 0                      |                        |         |
| Qualitative Index a/*          |                        |                        |       |                        |                        |         |                        |                        |         |                        |                        |       |                        |                        |         |
| 1                              |                        |                        |       |                        | 3                      |         |                        | 9                      |         |                        |                        |       |                        |                        |         |
| 2                              |                        |                        |       |                        | 3                      |         |                        | 5                      |         |                        |                        |       |                        |                        |         |
| 3                              |                        |                        |       |                        |                        |         |                        |                        |         |                        |                        |       |                        |                        |         |
| 0                              |                        |                        |       |                        |                        |         |                        |                        |         |                        |                        |       |                        |                        |         |
| Group b/*                      |                        |                        |       |                        |                        |         |                        |                        |         |                        |                        |       |                        |                        |         |
| 1                              |                        |                        |       |                        | 2                      |         |                        | 14                     |         |                        |                        |       |                        |                        |         |
| 2                              |                        |                        |       |                        | 4                      |         |                        |                        |         |                        |                        |       |                        |                        |         |
| 3                              |                        |                        |       |                        |                        |         |                        |                        |         |                        |                        |       |                        |                        |         |
| Distillate                     |                        |                        |       |                        |                        |         |                        |                        |         |                        |                        |       |                        |                        |         |
| Total Yield to 300°C (Percent) |                        |                        |       | 30/38                  | 34.0                   |         | 32/43                  | 39.2                   |         |                        |                        |       |                        |                        |         |

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## 10. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                      | Group I                    |                  |                     | Group II         |                  |  | Group III        |                  |  | Group IV         |                  |  | Group V          |                  |  |
|------------------------------|----------------------------|------------------|---------------------|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                              | Number of Crudes           | Percent of Total |                     | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
| Resin                        | 0                          |                  |                     | 6                | (30%)            |  | 14               | (70%)            |  | 0                |                  |  | 0                |                  |  |
| Sub-Class (Percent)          |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1 (17 and under)             |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2 (18 to 35)                 |                            |                  |                     |                  | 6                |  |                  | 2                |  |                  |                  |  |                  |                  |  |
| 3 (over 35)                  |                            |                  |                     |                  |                  |  |                  | 12               |  |                  |                  |  |                  |                  |  |
| Residue Less Resin (Percent) |                            |                  |                     | 12/27            | 22.47            |  | 18/40            | 29.67            |  |                  |                  |  |                  |                  |  |
| Sulfur                       |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Class (Percent)              |                            |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1 (0.5 and under)            |                            |                  |                     |                  | 6                |  |                  | 1                |  |                  |                  |  |                  |                  |  |
| 2 (over 0.5)                 |                            |                  |                     |                  |                  |  |                  | 13               |  |                  |                  |  |                  |                  |  |
| a. Qualitative Index:        | Gasoline                   | Kerosene         | Oil Fraction        |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                            | ON 72 and above            | ON 40 and above  | Sp gr .903 and less |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                            | ON 65/71                   | ON 30/39         | Sp gr .904/.927     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                            | ON below 65                | ON below 30      | Sp gr above .927    |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 0                            | No gasoline                |                  | No oil fraction     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| b. Group 1                   | Oil Fraction               |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                            | Four point -16°C and below |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                            | Four point -15°C to +20°C  |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
|                              | Four point above +20°C     |                  |                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |

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## 11. Summary of Crude Oil Specifications by Oil Regions

Sakhalin

| Product                    | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|----------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                            | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                            | Range            | (28.6%)          |         | Range            | (57.2%)          |         | Range            | (14.2%)          |         | Range            | (14.2%)          |         | Range            | (14.2%)          |         |
| Gasoline                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Percent of Yield           | Nil              | Nil              |         | 0.0/10.0         | 3.8              |         | 10.1/20.0        | Nil              |         | 20.1/30.0        | 27.0             |         | Over 30.1        | Nil              |         |
| Octane Number              |                  |                  |         | 70/75            | 72.5             |         |                  |                  |         |                  | 71.5             |         |                  |                  |         |
| Qualitative Index a/*      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number, Lead        |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Kerosene                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Estimated Percent of Yield | 10/26            | 18.0             |         | 26/31.6          | 28.2             |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number              | 40/48            | 44.0             |         | 40/48            | 44.0             |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Qualitative Index a/       |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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## 11. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                        | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|--------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                                | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
| Oil Fraction                   | 2                | (28.6%)          |         | 4                | (57.2%)          |         | 0                |                  |         | 1                | (14.2%)          |         | 0                |                  |         |
| Qualitative Index a/*          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  | 2                |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  | 1                |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Group b/*                      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  | 2                |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  | 1                |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Distillate                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Total Yield to 300°C (Percent) | 10/26            | 18.0             |         | 28/34            | 32.0             |         |                  |                  |         |                  |                  |         |                  |                  | 64.0    |

\* Footnotes follow on p. 47.

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11. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                                                                                                                                                                                                                                                                                                                                                                                                                           | Group I                     |                  |                     | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------|---------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|-----------------------|--------------|----------|----------------------------|-------------------|-----------------------------|---------------------|--------------------------|----------|-----------------|---------------|-------------|------------------|---------------|--|-----------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                   | Number of Crudes            | Percent of Total | Average             | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| Resin                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| Sub-Class (Percent)                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| 1 (17 and under)                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                  |                     |                  | 1                |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| 2 (18 to 35)                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |                  |                     |                  | 1                |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| 3 (over 35)                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| Residue Less Resin (Percent)                                                                                                                                                                                                                                                                                                                                                                                                      | 36/59                       | 47.9             |                     | 20/37            | 27.9             |         |                  |                  |         | 1                | (14.2%)          |         | 0                |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| Sulfur                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| Class (Percent)                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| 1 (0.5 and under)                                                                                                                                                                                                                                                                                                                                                                                                                 |                             | 2                |                     |                  | 2                |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| 2 (over 0.5)                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |                  |                     |                  | 1                |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| <table><tr><td rowspan="5">a. Qualitative Index:</td><td>Gasoline</td><td>Kerosene</td><td>Oil Fraction</td></tr><tr><td>1 ON 72 and above</td><td>ON 40 and above</td><td>Sp gr .903 and less</td></tr><tr><td>2 ON 65/71</td><td>ON 30/39</td><td>Sp gr .904/.927</td></tr><tr><td>3 ON below 65</td><td>ON below 30</td><td>Sp gr above .927</td></tr><tr><td>0 No gasoline</td><td></td><td>No oil fraction</td></tr></table> |                             |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         | a. Qualitative Index: | Gasoline     | Kerosene | Oil Fraction               | 1 ON 72 and above | ON 40 and above             | Sp gr .903 and less | 2 ON 65/71               | ON 30/39 | Sp gr .904/.927 | 3 ON below 65 | ON below 30 | Sp gr above .927 | 0 No gasoline |  | No oil fraction |
| a. Qualitative Index:                                                                                                                                                                                                                                                                                                                                                                                                             | Gasoline                    | Kerosene         | Oil Fraction        |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 ON 72 and above           | ON 40 and above  | Sp gr .903 and less |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 ON 65/71                  | ON 30/39         | Sp gr .904/.927     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3 ON below 65               | ON below 30      | Sp gr above .927    |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0 No gasoline               |                  | No oil fraction     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
| <table><tr><td rowspan="4">b. Group 1</td><td>Oil Fraction</td><td></td></tr><tr><td>Pour point -16°C and below</td><td></td></tr><tr><td>2 Pour point -15°C to +20°C</td><td></td></tr><tr><td>3 Pour point above +20°C</td><td></td></tr></table>                                                                                                                                                                               |                             |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         | b. Group 1            | Oil Fraction |          | Pour point -16°C and below |                   | 2 Pour point -15°C to +20°C |                     | 3 Pour point above +20°C |          |                 |               |             |                  |               |  |                 |
| b. Group 1                                                                                                                                                                                                                                                                                                                                                                                                                        | Oil Fraction                |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                   | Pour point -16°C and below  |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 Pour point -15°C to +20°C |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3 Pour point above +20°C    |                  |                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                       |              |          |                            |                   |                             |                     |                          |          |                 |               |             |                  |               |  |                 |

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## 12. Summary of Crude Oil Specifications by Oil Regions

Ukhda

| Product                    | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|----------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                            | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
| Gasoline                   | 3                | (75%)            |         | 0                |                  |         | 1                | (25%)            |         | 0                |                  |         | 0                |                  |         |
| Percent of Yield           |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number              | Nil              | Nil              |         | 0.0/10.0         |                  |         | 10.1/20.0        | 15.0             |         | 20.1/30.0        |                  |         | Over 30.1        |                  |         |
| Qualitative Index a/**     |                  |                  |         |                  |                  |         |                  | 52.0             |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number, Leaded      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Kerosene                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Estimated Percent of Yield |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Octane Number              | 12/17            | 14.3             |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Qualitative Index a/       | 40/47            | 44.0             |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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12. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                        | Group I          |                  |         | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|--------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                                | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
|                                | Range            |                  |         | Range            |                  |         | Range            |                  |         | Range            |                  |         | Range            |                  |         |
| Oil Fraction                   |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Qualitative Index a/*          |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 0                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Group b/*                      |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                              |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Distillate                     |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Total Yield to 300°C (Percent) | 12/17            |                  | 14.3    |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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## 12. Summary of Crude Oil Specifications by Oil Regions

(Continued)

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13. Summary of Crude Oil Specifications by Oil Regions  
Turkmenistan

| Product                    | Group I          |                  |  | Group II         |                  |  | Group III        |                  |  | Group IV         |                  |  | Group V          |                  |  |
|----------------------------|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                            | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
| Gasoline                   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Percent of Yield           | Nil              | Nil              |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Octane Number              |                  |                  |  | 0.0/10.0         | 6.0              |  | 10.1/20.0        |                  |  | 20.1/30.0        |                  |  | Over 30.1        |                  |  |
| Qualitative Index a/*      |                  |                  |  |                  | 68.5             |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 0                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Octane Number, Leaded      |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Kerosene                   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Estimated Percent of Yield |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Octane Number              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Qualitative Index a/       |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |

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13. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                        | Group I                |                        |  | Group II               |                        |  | Group III              |                        |  | Group IV               |                        |  | Group V                |                        |  |
|--------------------------------|------------------------|------------------------|--|------------------------|------------------------|--|------------------------|------------------------|--|------------------------|------------------------|--|------------------------|------------------------|--|
|                                | Number<br>of<br>Crudes | Percent<br>of<br>Total |  | Number<br>of<br>Crudes | Percent<br>of<br>Total |  | Number<br>of<br>Crudes | Percent<br>of<br>Total |  | Number<br>of<br>Crudes | Percent<br>of<br>Total |  | Number<br>of<br>Crudes | Percent<br>of<br>Total |  |
| Oil Fraction                   |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Qualitative Index s/*          |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 1                              |                        |                        |  | 1                      | (100%)                 |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 2                              |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 3                              |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 0                              |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Group b/*                      |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 1                              |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 2                              |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 3                              |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Distillate                     |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Total Yield to 300°C (Percent) |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
|                                |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |

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13. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                               | Group I          |                  |  | Group II         |                  |   | Group III           |                  |  | Group IV         |                  |  | Group V          |                  |  |
|---------------------------------------|------------------|------------------|--|------------------|------------------|---|---------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                                       | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |   | Number of Crudes    | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
| Resin                                 |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| Sub-Class (Percent)                   |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| 1 (17 and under)                      |                  |                  |  |                  |                  | 1 |                     |                  |  |                  |                  |  |                  |                  |  |
| 2 (18 to 35)                          |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| 3 (over 35)                           |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| Residue Less Resin (Percent)          |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
|                                       |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| Sulfur                                |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| Class (Percent)                       |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| 1 (0.5 and under)                     |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| 2 (over 0.5)                          |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| a. Qualitative Index:                 | Gasoline         |                  |  | Kerosene         |                  |   | Oil Fraction        |                  |  |                  |                  |  |                  |                  |  |
| 1 ON 72 and above                     | ON 40 and above  |                  |  | ON 30/39         |                  |   | Sp gr .903 and less |                  |  |                  |                  |  |                  |                  |  |
| 2 ON 65/71                            | ON below 30      |                  |  |                  |                  |   | Sp gr .904/927      |                  |  |                  |                  |  |                  |                  |  |
| 3 ON below 65                         |                  |                  |  |                  |                  |   | Sp gr above .927    |                  |  |                  |                  |  |                  |                  |  |
| 0 No gasoline                         |                  |                  |  |                  |                  |   | No oil fraction     |                  |  |                  |                  |  |                  |                  |  |
| b. Group 1 Pour point -16°C and below |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| 2 Pour point -15°C to +20°C           |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |
| 3 Pour point above +20°C              |                  |                  |  |                  |                  |   |                     |                  |  |                  |                  |  |                  |                  |  |

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14. Summary of Crude Oil Specifications by Oil Regions  
Severnny

| Product                    | Group I                |                        |  | Group II               |                        |  | Group III              |                        |  | Group IV               |                        |  | Group V                |                        |  |
|----------------------------|------------------------|------------------------|--|------------------------|------------------------|--|------------------------|------------------------|--|------------------------|------------------------|--|------------------------|------------------------|--|
|                            | Number<br>of<br>Crudes | Percent<br>of<br>Total |  | Number<br>of<br>Crudes | Percent<br>of<br>Total |  | Number<br>of<br>Crudes | Percent<br>of<br>Total |  | Number<br>of<br>Crudes | Percent<br>of<br>Total |  | Number<br>of<br>Crudes | Percent<br>of<br>Total |  |
|                            | Range                  | Average                |  | Range                  | Average                |  | Range                  | Average                |  | Range                  | Average                |  | Range                  | Average                |  |
| Gasoline                   | 1                      | (100%)                 |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Percent of Yield           | Nil                    | Nil                    |  | 0.0/10.0               |                        |  | 10.1/20.0              |                        |  | 20.1/30.0              |                        |  | Over 30.1              |                        |  |
| Octane Number              |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Qualitative Index a/*      |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 1                          |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 2                          |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 3                          |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 0                          |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Octane Number, Leaded      |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Kerosene                   |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Estimated Percent of Yield |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Octane Number              |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| Qualitative Index a/       |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 1                          |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 2                          |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |
| 3                          |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |                        |                        |  |

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14. Summary of Crude Oil Specifications by Oil Regions  
(Continued)

| Product                        | Group I          |                  |  | Group II         |                  |  | Group III        |                  |  | Group IV         |                  |  | Group V          |                  |  |
|--------------------------------|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                                | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
|                                | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  |
| Oil Fraction                   |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Qualitative Index a/*          |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 0                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Group b/*                      |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Distillate                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Total Yield to 300°C (Percent) |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
|                                |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |

\* Footnotes follow on p. 56.

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## 14. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                      | Group I                                                                       |                                                        |                                                                                               | Group II         |                  |         | Group III        |                  |         | Group IV         |                  |         | Group V          |                  |         |
|------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|------------------|------------------|---------|
|                              | Number of Crudes                                                              | Percent of Total                                       | Average                                                                                       | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average | Number of Crudes | Percent of Total | Average |
| Resin                        | 1                                                                             | (100%)                                                 |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Sub-Class (Percent)          |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 (17 and under)             |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 (18 to 35)                 |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3 (over 35)                  |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Residue Less Resin (Percent) |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Sulfur                       |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| Class (Percent)              |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 1 (0.5 and under)            |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2 (over 0.5)                 |                                                                               |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| a. Qualitative Index:        | Gasoline<br>1 ON 72 and above<br>2 ON 65/71<br>3 ON below 65<br>0 No gasoline | Kerosene<br>ON 40 and above<br>ON 30/39<br>ON below 30 | Oil Fraction<br>Sp gr .903 and less<br>Sp gr .904/.927<br>Sp gr above .927<br>No oil fraction |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| b. Group 1                   | Pour point -16°C and below                                                    |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 2                            | Pour point -15°C to +20°C                                                     |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |
| 3                            | Pour point above +20°C                                                        |                                                        |                                                                                               |                  |                  |         |                  |                  |         |                  |                  |         |                  |                  |         |

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## 15. Summary of Crude Oil Specifications by Oil Regions

## Kamchatka

| Product                    | Group I          |                  |         | Group II |                  |                  | Group III |                  |                  | Group IV |                  |                  | Group V |                  |                  |
|----------------------------|------------------|------------------|---------|----------|------------------|------------------|-----------|------------------|------------------|----------|------------------|------------------|---------|------------------|------------------|
|                            | Number of Crudes | Percent of Total | Average | Range    | Number of Crudes | Percent of Total | Range     | Number of Crudes | Percent of Total | Range    | Number of Crudes | Percent of Total | Range   | Number of Crudes | Percent of Total |
|                            |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| Gasoline                   |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| Percent of Yield           | Nil              | Nil              |         |          | 0.0/10.0         |                  |           | 10.1/20.0        | 15.0             |          | 20.1/30.0        |                  |         | Over 30.1        |                  |
| Octane Number              |                  |                  |         |          |                  |                  |           |                  | 68.0             |          |                  |                  |         |                  |                  |
| Qualitative Index a/*      |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| 1                          |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| 2                          |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| 3                          |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| 0                          |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| Octane Number, Leaded      |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| Kerosene                   |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| Estimated Percent of Yield |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| Octane Number              |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| Qualitative Index a/       |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| 1                          |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| 2                          |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |
| 3                          |                  |                  |         |          |                  |                  |           |                  |                  |          |                  |                  |         |                  |                  |

\* Footnotes follow on p. 59.

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## 15. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                        | Group I          |                  |  | Group II         |                  |  | Group III        |                  |  | Group IV         |                  |  | Group V          |                  |  |
|--------------------------------|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|------------------|------------------|--|
|                                | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  | Number of Crudes | Percent of Total |  |
| Oil Fraction                   | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  | Range            | Average          |  |
| Qualitative Index a/**         |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                              |                  |                  |  |                  |                  |  | 1                | (100%)           |  |                  |                  |  |                  |                  |  |
| 2                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 0                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Group b/**                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 1                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 2                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| 3                              |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Distillate                     |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
| Total Yield to 300°C (Percent) |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |
|                                |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |                  |                  |  |

Total Yield to 300°C (Percent)

39.0

\* Footnotes follow on p. 59.

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## 15. Summary of Crude Oil Specifications by Oil Regions

(Continued)

| Product                      | Group I                    |                  | Group II         |                  | Group III           |                  | Group IV         |                  | Group V          |                  |
|------------------------------|----------------------------|------------------|------------------|------------------|---------------------|------------------|------------------|------------------|------------------|------------------|
|                              | Number of Crudes           | Percent of Total | Number of Crudes | Percent of Total | Number of Crudes    | Percent of Total | Number of Crudes | Percent of Total | Number of Crudes | Percent of Total |
| Resin                        | Range                      | Average          | Range            | Average          | Range               | Average          | Range            | Average          | Range            | Average          |
| Sub-Class (Percent)          |                            |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| 1 (17 and under)             |                            |                  |                  |                  | 1                   | (100%)           |                  |                  |                  |                  |
| 2 (18 to 35)                 |                            |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| 3 (over 35)                  |                            |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| Residue Less Resin (Percent) |                            |                  |                  |                  |                     |                  |                  |                  |                  |                  |
|                              |                            |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| Sulfur                       |                            |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| Class (Percent)              |                            |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| 1 (0.5 and under)            |                            |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| 2 (over 0.5)                 |                            |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| a. Qualitative Index:        | Gasoline                   |                  | Kerosene         |                  | Oil Fraction        |                  |                  |                  |                  |                  |
| 1                            | ON 72 and above            |                  | ON 40 and above  |                  | Sp gr .903 and less |                  |                  |                  |                  |                  |
| 2                            | ON 65/71                   |                  | ON 30/39         |                  | Sp gr .904/.927     |                  |                  |                  |                  |                  |
| 3                            | ON below 65                |                  | ON below 30      |                  | Sp gr above .927    |                  |                  |                  |                  |                  |
| 0                            | No gasoline                |                  |                  |                  | No oil fraction     |                  |                  |                  |                  |                  |
| b. Group                     | Oil Fraction               |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| 1                            | Pour point -16°C and below |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| 2                            | Pour point -15°C to +20°C  |                  |                  |                  |                     |                  |                  |                  |                  |                  |
| 3                            | Pour point above +20°C     |                  |                  |                  |                     |                  |                  |                  |                  |                  |

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## APPENDIX C

### CRUDE OIL SPECIFICATIONS BY FIELDS

#### Explanatory Notes.

The notes below are intended to clarify the meanings of the various items specified in the following tables.

1. Classification According to GOST 912-46: Example - 1;2;3;332

The numbers in each such numerical classification indicate the following:

- (A) First Number - Sulfur Content
  - 1 - 0.5 percent or below
  - 2 - above 0.5 percent
- (B) Second Number - Resin Content
  - 1 - 17 percent and below
  - 2 - 18 - 35 percent
  - 3 - over 35 percent
- (C) Third Number - Paraffin Content
  - 1 - Pour point -16°C and below
  - 2 - Pour point -15°C to + 20°C
  - 3 - Pour point Above + 20°C
- (D) Three Digit Number
  - (1) First - Octane No. of Gasoline Fraction
    - 1 - 72 and above
    - 2 - 65 to 71
    - 3 - below 65
    - 0 - No gasoline
  - (2) Second - Octane No. of Kerosene Fraction
    - 1 - 40 and above
    - 2 - 30 to 39
    - 3 - below 30
  - (3) Third - Specific Gravity of Oil Fraction
    - 1 - 0.903 and below
    - 2 - 0.904 to 0.927
    - 3 - above 0.927

2. (a) This is the "Serial Number" used to identify the crude oils as listed in Appendix I, CIA, Foreign Documents Division Translation No. 311, Classification of USSR Petroleum According to GOST 912-46, 13 August 1951.

3. (b) Gasoline, 40 percent of which is distilled at a temperature up to 100°C.

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4. (c) Three (3) milliliters of ethyl fluid (approximately 54 percent by weight TEL) per kilogram of gasoline. This is equivalent to about 4.3 milliliters of tetra ethyl lead per U. S. gallon.
5. (d) Represents the arithmetical difference between the total yield of distillate boiling to 300°C and the gasoline yield. (Also includes raw materials for tractor fuels, solvents, naphthas, and portions of jet fuels and gas oils.)
6. (e) The residue was obtained by subtracting the total distillate yield to 300°C from 100 percent. By multiplying this "residue" value (percent) by the percent of "resin in the residue," as given in GOST 912-46, the percent of "resin in the crude" was determined. The "residue less resin" is equal to 100 percent minus the sum of the total distillate to 300°C plus the "resin in the crude."
7. (f) The oil fraction is that fraction of the crude oil which has a kinematic viscosity at 50°C of 52 centistokes (7 degrees Engler at 50 degrees Centigrade).

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## Crude Oil Specifications

## Baku

|                                            | Surakhany<br>White | Surakhany<br>Select | Surakhany<br>Oily | Surakhany<br>Ordinary |
|--------------------------------------------|--------------------|---------------------|-------------------|-----------------------|
| Classification According to<br>GOST 912-46 | 1;1;1;120          | 1;1;3;131           | 1;2;1;322         | 1;2;2;132             |
| Serial Number a/                           | 9                  | 23                  | 37                | 52                    |
| Sulfur (Weight Percent)                    | 0.10               | 0.12                | 0.30              | 0.19                  |
| Gasoline                                   |                    |                     |                   |                       |
| Yield (Weight Percent) b/                  | 30.5               | 7.1                 | 5.5               | 4.7                   |
| Octane Number                              | 75.5               | 74.5                | 61.5              | 74.5                  |
| Octane Number (Leaded) c/                  | 92.5               | 91                  | 83.5              |                       |
| Kerosene                                   |                    |                     |                   |                       |
| Yield Percent d/                           | 65.5               | 35.9                | 32.5              | 37.3                  |
| Octane Number                              | Below 36           | 25                  | 35                | 27                    |
| Distillate Yield to 300°C (Percent)        | 96                 | 43                  | 38                | 42                    |
| Residue (Percent) e/                       | 4                  | 57                  | 62                | 58                    |
| Resin (Residue) (Percent) e/               | 0                  | 14                  | 34                | 18                    |
| Resin (Crude) (Percent) e/                 | 0                  | 8                   | 21.1              | 10.4                  |
| Residue Less Resin (Percent) e/            | 4                  | 49                  | 40.9              | 47.6                  |
| Oil Fraction f/                            |                    |                     |                   |                       |
| Gravity                                    |                    | .901                | .924              | .904                  |
| Viscosity/Gravity Constant                 |                    | .843                | .875              | .847                  |
| Pour Point (°C)                            |                    | +25                 | Below -20         | +16                   |

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## Crude Oil Specifications (Continued)

|                                            | Baku               |                         |                   |                       |
|--------------------------------------------|--------------------|-------------------------|-------------------|-----------------------|
|                                            | Surakhany<br>Heavy | Lok-Batan<br>Paraffinic | Lok-Batan<br>Oily | Lok-Batan<br>Resinous |
| Classification According to<br>GOST 912-46 | 1;2;2;332          | 1;2;3;232               | 1;3;1;112         | 1;3;1;113             |
| Serial Number <u>a/</u>                    | 57                 | 66                      | 89                | 93                    |
| Sulfur (Weight Percent)                    | 0.28               | 0.25                    | 0.20              | 0.20                  |
| Gasoline                                   |                    |                         |                   |                       |
| Yield (Weight Percent) <u>b/</u>           | 4.7                | 7                       | 3.8               | 1.3                   |
| Octane Number                              | 62.5               | 66.5                    | 73.5              | 77                    |
| Octane Number (Leaded) <u>c/</u>           | 80                 |                         |                   |                       |
| Kerosene                                   |                    |                         |                   |                       |
| Yield Percent <u>d/</u>                    | 26.3               | 29                      | 26.2              | 26.7                  |
| Octane Number                              | 29                 | 27                      | 45                | 51                    |
| Distillate Yield to 300°C (Percent)        | 31                 | 36                      | 30                | 28                    |
| Residue (Percent) <u>e/</u>                | 69                 | 64                      | 70                | 72                    |
| Resin (Residue) (Percent) <u>e/</u>        | 30                 | 20                      | 43                | 72                    |
| Resin (Crude) (Percent) <u>e/</u>          | 20.7               | 12.8                    | 30.1              | 51.8                  |
| Residue Less Resin (Percent) <u>e/</u>     | 48.3               | 51.2                    | 39.9              | 20.2                  |
| Oil Fraction <u>f/</u>                     |                    |                         |                   |                       |
| Gravity                                    | .921               | .913                    | .927              | .937                  |
| Viscosity/Gravity Constant                 | .871               | .860                    | .879              | .893                  |
| Pour Point (°C)                            | +14                | +38                     | Below -20         | Below -20             |
|                                            | - 64 -             |                         |                   |                       |

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## Crude Oil Specifications (Continued)

|                                            | Baku      |                             |                     |
|--------------------------------------------|-----------|-----------------------------|---------------------|
|                                            | Pirsagat  | Pirsagat<br>Oil Well No. 10 | Bibi-Eybat<br>Heavy |
| Classification According to<br>GOST 912-46 | 1;2;3;331 | 1;3;1;222                   | 1;3;1;113           |
| Serial Number <u>a/</u>                    | 70        | 103                         | 92                  |
| Sulfur (Weight Percent)                    | 0.20      | 0.25                        | 0.21                |
| Gasoline                                   |           |                             |                     |
| Yield (Weight Percent) <u>b/</u>           | 9         | 20                          | 3.8                 |
| Octane Number                              | 62.5      | 65                          | 73                  |
| Octane Number (Leaded) <u>c/</u>           |           |                             |                     |
| Kerosene                                   |           |                             |                     |
| Yield Percent <u>d/</u>                    | 31        | 20                          | 37.2                |
| Octane Number                              | 12        | Below 36.5                  | 41.5                |
| Distillate Yield to 300°C (Percent)        | 40        | 40                          | 41                  |
| Residue (Percent) <u>e/</u>                | 60        | 60                          | 59                  |
| Resin (Residue) (Percent) <u>e/</u>        | 33        | 68                          | 46                  |
| Resin (Crude) (Percent) <u>e/</u>          | 19.8      | 40.8                        | 27.1                |
| Residue Less Resin (Percent) <u>e/</u>     | 40.2      | 19.2                        | 31.9                |
| Oil Fraction <u>f/</u>                     |           |                             |                     |
| Gravity                                    | .900      | .921                        | .928                |
| Viscosity/Gravity Constant                 | .842      | .871                        | .880                |
| Pour Point (°C)                            | +40       | Below -20                   | Below -20           |

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## Crude Oil Specifications (Continued)

## Baku

|                                            | Bibi-Eybat<br>Paraffinic | Ramaninskaya<br>Type II | Khodzhe-Gasanskaya | Siazanskiy<br>Levels II, III, IV |
|--------------------------------------------|--------------------------|-------------------------|--------------------|----------------------------------|
| Classification According to<br>GOST 912-46 |                          |                         |                    |                                  |
| Serial Number <u>a/</u>                    | 1;3;2;322<br>120         | 1;2;1;121<br>33         | 1;2;1;222<br>35    | 1;2;1;313<br>36                  |
| Sulfur (Weight Percent)                    | 0.24                     | 0.20                    | 0.30               | 0.20                             |
| Gasoline                                   |                          |                         |                    |                                  |
| Yield (Weight Percent) <u>b/</u>           | 8.6                      | 5.8                     | 10.7               | 25                               |
| Octane Number                              | 64                       | 74.5                    | 67.5               | 63                               |
| Octane Number (Leaded) <u>c/</u>           | 85                       | 91                      |                    |                                  |
| Kerosene                                   |                          |                         |                    |                                  |
| Yield Percent <u>d/</u>                    | 30.4                     | 39.2                    | 40.3               | 31                               |
| Octane Number                              | 38.5                     | 33                      | 36.5               | 45                               |
| Distillate Yield to 300°C (Percent)        | 39                       | 45                      | 51                 | 56                               |
| Residue (Percent) <u>e/</u>                | 61                       | 55                      | 49                 | 44                               |
| Resin (Residue) (Percent) <u>e/</u>        | 40                       | 23                      | 29                 | 25                               |
| Resin (Crude) (Percent) <u>e/</u>          | 24.4                     | 14.9                    | 14.2               | 11.0                             |
| Residue Less Resin (Percent) <u>e/</u>     | 36.6                     | 40.1                    | 34.8               | 33.0                             |
| Oil Fraction <u>f/</u>                     |                          |                         |                    |                                  |
| Gravity                                    | .922                     | .898                    | .923               | .948                             |
| Viscosity/Gravity Constant                 | .872                     | .839                    | .873               | .908                             |
| Pour Point (°C)                            | +11                      | Below -20               | Below -20          | Below -20                        |

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## Crude Oil Specifications (Continued)

|                                                                                                                                          | Baku                            |                                 |                         |                          |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------|-------------------------|--------------------------|
|                                                                                                                                          | Kara-Chukhur<br>Upper Formation | Kara-Chukhur<br>Lower Formation | Zykh<br>Upper Formation | Zykh<br>Lower Formation  |
| Classification According to<br>GOST 912-46                                                                                               | 1;1;3;131<br>24                 | 1;2;3;332<br>73                 | 1;1;3;331<br>25         | 1;2;3;332<br>74          |
| Serial Number a/<br>Sulfur (Weight Percent)                                                                                              | 0.12                            | 0.14                            | 0.18                    | 0.30                     |
| Gasoline                                                                                                                                 |                                 |                                 |                         |                          |
| Yield (Weight Percent) b/<br>Octane Number                                                                                               | 7.3<br>73.5                     | 7<br>63<br>81.5                 | 5.4<br>60               | 4.9<br>60.5              |
| Octane Number (Leaded) c/<br>Kerosene                                                                                                    |                                 |                                 |                         |                          |
| Yield Percent d/<br>Octane Number                                                                                                        | 36.7<br>21                      | 29<br>29.5                      | 46.6<br>Below 0         | 31.1<br>14.5             |
| Distillate Yield to 300°C (Percent)                                                                                                      | 44                              | 36                              | 52                      | 36                       |
| Residue (Percent) e/<br>Resin (Residue) (Percent) e/<br>Resin (Crude) (Percent) e/<br>Residue Less Resin (Percent) e/<br>Oil Fraction f/ | 56<br>14<br>7.9<br>48.1         | 64<br>28<br>17.9<br>46.1        | 48<br>8<br>4<br>44      | 64<br>31<br>19.8<br>44.2 |
| Gravity                                                                                                                                  | .896                            | .919                            | .896                    | .916                     |
| Viscosity/Gravity Constant                                                                                                               | .836                            | .868                            | .836                    | .864                     |
| Pour Point (°C)                                                                                                                          | Above +40                       | Above +27                       | Above +40               | Above +40                |

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## Crude Oil Specifications (Continued)

|                                            | Baku          |            |              |                          |
|--------------------------------------------|---------------|------------|--------------|--------------------------|
|                                            | Yasamal'skaya | Neftechala | Puti<br>Oily | Balakhany<br>Oily Type I |
| Classification According to<br>GOST 912-46 | 1;2;2;323     | 1;3;1;112  | 1;3;1;113    | 1;2;1;121                |
| Serial Number a/                           | 55            | 90         | 94           | 34                       |
| Sulfur (Weight Percent)                    | 0.28          | 0.25       | 0.30         | 0.11                     |
| Gasoline                                   |               |            |              |                          |
| Yield (Weight Percent) b/                  | 6.6           | 7          | 2            | 5.5                      |
| Octane Number                              | 61            | 76         | 74.5         | 74.5                     |
| Octane Number (Leaded) c/                  |               |            |              | 91                       |
| Kerosene                                   |               |            |              |                          |
| Yield Percent d/                           | 27.4          | 29         | 31           | 35.5                     |
| Octane Number                              | 31.5          | 44         | 46.5         | 36                       |
| Distillate Yield to 300°C (Percent)        | 34            | 36         | 33           | 41                       |
| Residue (Percent) e/                       | 66            | 64         | 67           | 59                       |
| Resin (Residue) (Percent) e/               | 30            | 54.7       | 51           | 25                       |
| Resin (Crude) (Percent) e/                 | 19.8          | 35         | 34.2         | 14.8                     |
| Residue Less Resin (Percent) e/            | 46.2          | 29         | 32.8         | 44.2                     |
| Oil Fraction f/                            |               |            |              |                          |
| Gravity                                    | .932          | .915       | .929         | .903                     |
| Viscosity/Gravity Constant                 | .886          | .862       | .882         | .846                     |
| Pour Point (°C)                            | -10           | Below -20  | Below -20    | Below -20                |

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## Crude Oil Specifications (Continued)

|                                            | Baku              |           |                  |             |
|--------------------------------------------|-------------------|-----------|------------------|-------------|
|                                            | Balakany<br>Heavy | Artem     | Chaknaglyarskaya | Kyurdakhany |
| Classification According to<br>GOST 912-46 | 1;3;1;213         | 1;3;1;113 | 1;3;1;212        | 1;3;1;013   |
| Serial Number a/                           | 101               | 95        | 97               | 111         |
| Sulfur (Weight Percent)                    | 0.30              | 0.33      | 0.44             | .30         |
| Gasoline                                   |                   |           |                  |             |
| Yield (Weight Percent) b/                  | 2.2               | 0.5       | 4.7              | 0           |
| Octane Number                              | 70                | 76        | 65               |             |
| Octane Number (Leaded) c/                  | 88                |           | 89.5             |             |
| Kerosene                                   |                   |           |                  |             |
| Yield Percent d/                           | 24.8              | 23.5      | 26.3             | 14          |
| Octane Number                              | 46                | 40        | 44.5             | 46          |
| Distillate Yield to 300°C (Percent)        | 27                | 24        | 31               | 14          |
| Residue (Percent) e/                       | 73                | 76        | 69               | 86          |
| Resin (Residue) (Percent) e/               | 37                | 50        | 46               | 40          |
| Resin (Crude) (Percent) e/                 | 27                | 38        | 31.7             | 34          |
| Residue Less Resin (Percent) e/            | 46.0              | 38        | 37.3             | 52          |
| Oil Fraction f/                            |                   |           |                  |             |
| Gravity                                    | .933              | .931      | .925             | .930        |
| Viscosity/Gravity Constant                 | .887              | .884      | .876             | .883        |
| Pour Point (°C)                            | Below -20         | Below -20 | Below -20        | Below -20   |

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## Crude Oil Specifications (Continued)

|                                         | Baku            |           |           |                |
|-----------------------------------------|-----------------|-----------|-----------|----------------|
|                                         | Sulu-Tepinskaya | Mashtagi  | Buzovny   | Binagady Heavy |
| Classification According to GOST 912-46 |                 |           |           |                |
| Serial Number a/                        | 1;3;1;213       | 1;3;1;012 | 1;3;1;013 | 1;3;1;213      |
| Sulfur (Weight Percent)                 | 100             | 107       | 110       | 99             |
| Gasoline                                | 0.30            | 0.30      | 0.30      | 0.33           |
| Yield (Weight Percent) b/               |                 |           |           |                |
| Octane Number                           | 2.7             | 0         | 0         | 3.2            |
| Octane Number (Leaded) c/               | 69              |           |           | 68.5           |
|                                         | 88              |           |           | 86.5           |
| Kerosene                                |                 |           |           |                |
| Yield Percent d/                        |                 |           |           |                |
| Octane Number                           | 42.3            | 22        | 22        | 26.8           |
|                                         | 41.5            | 42        | 40        | 44             |
| Distillate Yield to 300°C (Percent)     |                 |           |           |                |
| Residue (Percent) e/                    | 45              | 22        | 22        | 30             |
| Resin (Residue) (Percent) e/            | 55              | 78        | 78        | 70             |
| Resin (Crude) (Percent) e/              | 39              | Above 60  | 40        | 40             |
| Residue Less Resin (Percent) e/         | 21.4            | 46.8      | 31.2      | 28             |
| Oil Fraction f/                         | 33.6            | 31.2      | 46.8      | 42             |
| Gravity                                 | .932            | .925      | .928      | .934           |
| Viscosity/Gravity Constant              | .886            | .876      | .880      | .889           |
| Pour Point (°C)                         | Below -20       | Below -20 | Below -20 | Below -20      |

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## Crude Oil Specifications (Continued)

|                                            | Bak <sup>n</sup>             |                                   |                                 |                                 |
|--------------------------------------------|------------------------------|-----------------------------------|---------------------------------|---------------------------------|
|                                            | <u>Binagady<br/>Diatomic</u> | <u>Kala<br/>Kalinskaya Series</u> | <u>Kala<br/>Upper Formation</u> | <u>Kala<br/>Lower Formation</u> |
| Classification According to<br>GOST 912-46 | 1;3;1;313                    | 1;3;3;332                         | 1;2;2;122                       | 1;2;2;222                       |
| Serial Number <u>a/</u>                    | 106                          | 130                               | 51                              | 53                              |
| Sulfur (Weight Percent)                    | 0.30                         | 0.30                              | 0.26                            | 0.30                            |
| Gasoline                                   |                              |                                   |                                 |                                 |
| Yield (Weight Percent) <u>b/</u>           | 19.5                         | 11                                | 5.3                             | 3.5                             |
| Octane Number                              | 61.5                         | 64                                | 77                              | 70                              |
| Octane Number (Leaded) <u>c/</u>           |                              | 86                                | 92                              | 88                              |
| Kerosene                                   |                              |                                   |                                 |                                 |
| Yield Percent <u>d/</u>                    | 39.5                         | 25                                | 44.7                            | 34.5                            |
| Octane Number                              | 42                           | Below 24                          | 35                              | 33                              |
| Distillate Yield to 300°C (Percent)        | 59                           | 36                                | 50                              | 38                              |
| Residue (Percent) <u>e/</u>                | 41                           | 64                                | 50                              | 62                              |
| Resin (Residue) (Percent) <u>e/</u>        | Above 60                     | 42                                | 30                              | 29                              |
| Resin (Crude) (Percent) <u>e/</u>          | 24.6                         | 26.9                              | 15.0                            | 18                              |
| Residue Less Resin (Percent) <u>e/</u>     | 16.4                         | 37.1                              | 35.0                            | 44.0                            |
| Oil Fraction <u>f/</u>                     |                              |                                   |                                 |                                 |
| Gravity                                    | .933                         | .914                              | .915                            | .916                            |
| Viscosity/Gravity Constant                 | .887                         | .861                              | .862                            | .864                            |
| Pour Point (°C)                            | Below -22                    | +35                               | +9                              | +9                              |

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## Crude Oil Specifications

## Emba

|                                            | Dossor,<br>Central Field,<br>Jurassic | Dossor,<br>Tas-Kuduskiy Section<br>Jurassic | Dossor,<br>185th Section,<br>Central Field<br>Jurassic | Makat,<br>Southeast Field,<br>II Jurassic |
|--------------------------------------------|---------------------------------------|---------------------------------------------|--------------------------------------------------------|-------------------------------------------|
| Classification According to<br>GOST 912-46 | 1;1;1;211                             | 1;1;2;211                                   | 1;1;3;111                                              | 1;1;1;011                                 |
| Serial Number a/                           | 2                                     | 12                                          | 22                                                     | 5                                         |
| Sulfur (Weight Percent)                    | 0.13                                  | 0.22                                        | 0.20                                                   | 0.20                                      |
| Gasoline                                   |                                       |                                             |                                                        |                                           |
| Yield (Weight Percent) b/                  | 2.5                                   | 2.4                                         | 4.7                                                    | 0                                         |
| Octane Number                              | 70                                    | 67                                          | 74                                                     |                                           |
| Octane Number (Leaded) c/                  |                                       |                                             |                                                        |                                           |
| Kerosene                                   |                                       |                                             |                                                        |                                           |
| Yield Percent d/                           | 38.5                                  | 22.6                                        | 43.                                                    | 23                                        |
| Octane Number                              | 40                                    | 45                                          | About 40                                               | About 50                                  |
| Distillate Yield to 300°C (Percent)        | 41                                    | 25                                          | 48                                                     | 23                                        |
| Residue (Percent) e/                       | 59                                    | 75                                          | 52                                                     | 77                                        |
| Resin (Residue) (Percent) e/               | 6                                     | 7.5                                         | 3                                                      | 15                                        |
| Resin (Crude) (Percent) e/                 | 3.5                                   | 5.6                                         | 1.6                                                    | 11.6                                      |
| Residue Less Resin (Percent) e/            | 55.5                                  | 69.4                                        | 50.4                                                   | 65.4                                      |
| Oil Fraction f/                            |                                       |                                             |                                                        |                                           |
| Gravity                                    | .895                                  | .881                                        | .873                                                   | .894                                      |
| Viscosity/Gravity Constant                 | .835                                  | .815                                        | .804                                                   | .833                                      |
| Pour Point (°C)                            | -40                                   | -5                                          | +22                                                    | Below -20                                 |

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Classification According to

GOST 912-46

Serial Number a/

Sulfur (Weight Percent)

Gasoline

Yield (Weight Percent) b/

Octane Number

Octane Number (Leaded) c/

Kerosene

Yield Percent d/

Octane Number

Distillate Yield to 300°C (Percent)

Residue (Percent) e/

Resin (Residue) (Percent) e/

Resin (Crude) (Percent) e/

Residue Less Resin (Percent) e/

Oil Fraction f/

Gravity

Viscosity/Gravity Constant

Pour Point (°C)

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## Crude Oil Specifications (Continued)

Emba

|                                            | Makat,<br>Southeast Field,<br>III Jurassic | Makat,<br>Southeast Field,<br>IV Jurassic | Makat,<br>North Field,<br>III Jurassic | Makat,<br>North Field,<br>Permian-Triassic |
|--------------------------------------------|--------------------------------------------|-------------------------------------------|----------------------------------------|--------------------------------------------|
| Classification According to<br>GOST 912-46 | 1;1;2;011                                  | 1;1;2;011                                 | 1;1;1;011                              | 1;1;2;011                                  |
| Serial Number <u>a/</u>                    | 17                                         | 18                                        | 4                                      | 19                                         |
| Sulfur (Weight Percent)                    | 0.20                                       | 0.20                                      | 0.20                                   | 0.20                                       |
| Gasoline                                   |                                            |                                           |                                        |                                            |
| Yield (Weight Percent) <u>b/</u>           | 0                                          | 0                                         | 0                                      | 0                                          |
| Octane Number                              |                                            |                                           |                                        |                                            |
| Octane Number (Leaded) <u>c/</u>           |                                            |                                           |                                        |                                            |
| Kerosene                                   |                                            |                                           |                                        |                                            |
| Yield Percent <u>d/</u>                    | 25                                         | 30                                        | 23                                     | 26                                         |
| Octane Number                              | About 50                                   | About 50                                  | About 50                               | About 50                                   |
| Distillate Yield to 300°C (Percent)        | 25                                         | 30                                        | 23                                     | 26                                         |
| Residue (Percent) <u>e/</u>                | 75                                         | 70                                        | 77                                     | 74                                         |
| Resin (Residue) (Percent) <u>e/</u>        | 11                                         | 7                                         | 17                                     | 8.5                                        |
| Resin (Crude) (Percent) <u>e/</u>          | 8.2                                        | 4.9                                       | 13.0                                   | 6.3                                        |
| Residue Less Resin (Percent) <u>e/</u>     | 66.8                                       | 65.1                                      | 64.0                                   | 67.7                                       |
| Oil Fraction <u>f/</u>                     |                                            |                                           |                                        |                                            |
| Gravity                                    | .886                                       | .879                                      | .894                                   | .879                                       |
| Viscosity/Gravity Constant                 | .822                                       | .812                                      | .833                                   | .812                                       |
| Pour Point (°C)                            | -14                                        | - 6                                       | Below -20                              | +11                                        |

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## Crude Oil Specifications (Continued)

|                                            | Emba                                 |                                       | Zhengel'dinskaya<br>Aptian | Zheldybayskaya<br>Jurassic |
|--------------------------------------------|--------------------------------------|---------------------------------------|----------------------------|----------------------------|
|                                            | Makat,<br>North Field,<br>I Jurassic | Makat,<br>North Field,<br>IV Jurassic |                            |                            |
| Classification According to<br>GOST 912-46 | 1;2;1;011                            | 011                                   | 1;2;1;021                  | 1;1;1;011                  |
| Serial Number a/                           | 39                                   |                                       | 46                         | 6                          |
| Sulfur (Weight Percent)<br>Gasoline        | 0.20                                 |                                       | 0.34                       | 0.20                       |
| Yield (Weight Percent) b/                  | 0                                    | 0                                     | 0                          | 0                          |
| Octane Number                              |                                      |                                       |                            |                            |
| Octane Number (Leaded) c/                  |                                      |                                       |                            |                            |
| Kerosene                                   |                                      |                                       |                            |                            |
| Yield Percent d/                           | 20                                   |                                       | 21                         | 9                          |
| Octane Number                              | About 50                             | About 50                              | 37                         | 41                         |
| Distillate Yield to 300°C (Percent)        | 20                                   |                                       | 21                         | 9                          |
| Residue (Percent) e/                       | 80                                   |                                       | 79                         | 91                         |
| Resin (Residue) (Percent) e/               | 21                                   |                                       | 23                         | 12                         |
| Resin (Crude) (Percent) e/                 | 16.8                                 |                                       | 18.2                       | 10.9                       |
| Residue Less Resin (Percent) e/            | 63.2                                 |                                       | 60.8                       | 80.1                       |
| Oil Fraction f/                            |                                      |                                       |                            |                            |
| Gravity                                    | .898                                 | .879                                  | .901                       | .899                       |
| Viscosity/Gravity Constant                 | .839                                 |                                       | .843                       | .840                       |
| Pour Point (°C)                            | Below -20                            |                                       | -25                        | -38                        |

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## Crude Oil Specifications (Continued)

|                                            | Emba                       |              |                                        |  | Sagiz,<br>East Field,<br>Lower Aptian |
|--------------------------------------------|----------------------------|--------------|----------------------------------------|--|---------------------------------------|
|                                            | Tyuleginskaya<br>Neocomian | Karatonskaya | South Kashkarskaya,<br>Middle Jurassic |  |                                       |
| Classification According to<br>GOST 912-46 | 012                        | 012          | 1;1;1;221                              |  | 1;1;1;121                             |
| Serial Number a/                           |                            |              | 3                                      |  | 1                                     |
| Sulfur (Weight Percent)<br>Gasoline        |                            |              | 0.17                                   |  | 0.20                                  |
| Yield (Weight Percent) b/                  |                            |              |                                        |  |                                       |
| Octane Number                              | 0                          | 0            | 1                                      |  | 3                                     |
| Octane Number (Leaded) c/                  |                            |              | 70                                     |  | 74.5                                  |
| Kerosene                                   |                            |              |                                        |  |                                       |
| Yield Percent d/                           |                            |              |                                        |  |                                       |
| Octane Number                              | 42                         | 48.5         | 23                                     |  | 21                                    |
| Distillate Yield to 300°C (Percent)        |                            |              | 34                                     |  | 38                                    |
| Residue (Percent) e/                       |                            |              | 24                                     |  | 24                                    |
| Resin (Residue) (Percent) e/               |                            |              | 76                                     |  | 76                                    |
| Resin (Crude) (Percent) e/                 |                            |              | 17                                     |  | 9                                     |
| Residue Less Resin (Percent) e/            |                            |              | 12.9                                   |  | 6.8                                   |
| Oil Fraction f/                            |                            |              | 63.1                                   |  | 69.2                                  |
| Gravity                                    | .912                       | .925         | .890                                   |  | .889                                  |
| Viscosity/Gravity Constant                 |                            |              | .828                                   |  | .826                                  |
| Pour Point (°C)                            |                            |              | -35                                    |  | -18                                   |

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## Crude Oil Specifications (Continued)

Emba

| Classification According to<br>GOST 912-46<br>Serial Number a/<br>Sulfur (Weight Percent)<br>Gasoline | Sagiz, East Field, IV Neocomian |                         |                         |                         | Sagiz, East Field, Middle Jurassic |                         |                         |                         | Sagiz, South Field, III Lower Aptian |                         |                         |                         |
|-------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------|-------------------------|-------------------------|------------------------------------|-------------------------|-------------------------|-------------------------|--------------------------------------|-------------------------|-------------------------|-------------------------|
|                                                                                                       | 1;1;2;121<br>10<br>0.20         | 1;2;1;011<br>40<br>0.20 | 1;2;2;011<br>58<br>0.20 | 1;1;2;121<br>11<br>0.20 | 1;1;2;121<br>11<br>0.20            | 1;2;2;011<br>58<br>0.20 | 1;2;2;011<br>58<br>0.20 | 1;1;2;121<br>11<br>0.20 | 1;1;2;121<br>11<br>0.20              | 1;1;2;121<br>11<br>0.20 | 1;1;2;121<br>11<br>0.20 | 1;1;2;121<br>11<br>0.20 |
| Yield (Weight Percent) b/                                                                             | 3                               | 0                       | 0                       | 0                       | 0                                  | 0                       | 0                       | 0                       | 0                                    | 0                       | 0                       | 0                       |
| Octane Number                                                                                         | 77.5                            |                         |                         |                         |                                    |                         |                         |                         |                                      |                         |                         |                         |
| Octane Number (Leaded) c/                                                                             | 90                              |                         |                         |                         |                                    |                         |                         |                         |                                      |                         |                         |                         |
| Kerosene                                                                                              |                                 |                         |                         |                         |                                    |                         |                         |                         |                                      |                         |                         |                         |
| Yield Percent d/                                                                                      | 31                              | 21                      | 25                      | 34.2                    | 34.2                               | 25                      | 25                      | 35                      | 35                                   | 35                      | 35                      | 35                      |
| Octane Number                                                                                         | About 38                        | About 40                | About 40                | 38                      | 38                                 | About 40                | About 40                | 38                      | 38                                   | 38                      | 38                      | 38                      |
| Distillate Yield to 300°C (Percent)                                                                   | 34                              | 21                      | 25                      | 35                      | 35                                 | 25                      | 25                      | 35                      | 35                                   | 35                      | 35                      | 35                      |
| Residue (Percent) e/                                                                                  | 66                              | 79                      | 75                      | 65                      | 65                                 | 75                      | 75                      | 65                      | 65                                   | 65                      | 65                      | 65                      |
| Resin (Residue) (Percent) e/                                                                          | 7                               | 19                      | 18                      | 7                       | 7                                  | 18                      | 18                      | 7                       | 7                                    | 7                       | 7                       | 7                       |
| Resin (Crude) (Percent) e/                                                                            | 4.6                             | 15.0                    | 13.5                    | 4.5                     | 4.5                                | 13.5                    | 13.5                    | 4.5                     | 4.5                                  | 4.5                     | 4.5                     | 4.5                     |
| Residue Less Resin (Percent) e/                                                                       | 61.4                            | 64.0                    | 61.5                    | 60.5                    | 60.5                               | 61.5                    | 61.5                    | 60.5                    | 60.5                                 | 60.5                    | 60.5                    | 60.5                    |
| Oil Fraction                                                                                          |                                 |                         |                         |                         |                                    |                         |                         |                         |                                      |                         |                         |                         |
| Gravity                                                                                               | .899                            | .901                    | .883                    | .879                    | .879                               | .883                    | .883                    | .879                    | .879                                 | .879                    | .879                    | .879                    |
| Viscosity/Gravity Constant                                                                            | .840                            | .843                    | .818                    | .812                    | .812                               | .818                    | .818                    | .812                    | .812                                 | .812                    | .812                    | .812                    |
| Pour Point (°C)                                                                                       | -6                              | Below -20               | +10                     | +12                     | +12                                | +10                     | +10                     | +12                     | +12                                  | +12                     | +12                     | +12                     |

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## Crude Oil Specifications (Continued)

## Emba

|                                            | Sagiz,<br>South Field,<br>Middle Jurassic | Sagiz,<br>South Field,<br>IV Neocomian | Sagiz,<br>South Field, XIII-<br>XIV Middle Jurassic | Sagiz,<br>West Field,<br>Permian-Triassic |
|--------------------------------------------|-------------------------------------------|----------------------------------------|-----------------------------------------------------|-------------------------------------------|
| Classification According to<br>GOST 912-46 | 1;1;2;011                                 | 1;2;2;011                              | -;-;-;12-                                           | 1;2;1;011                                 |
| Serial Number a/                           | 21                                        | 59                                     |                                                     | 41                                        |
| Sulfur (Weight Percent)                    | 0.20                                      | 0.20                                   |                                                     | 0.30                                      |
| Gasoline                                   |                                           |                                        |                                                     |                                           |
| Yield (Weight Percent) b/                  | 0                                         | 0                                      | 3.8                                                 | 0                                         |
| Octane Number                              |                                           |                                        | 72                                                  | 0                                         |
| Octane Number (Leaded) c/                  |                                           |                                        |                                                     |                                           |
| Kerosene                                   |                                           |                                        |                                                     |                                           |
| Yield Percent d/                           | 25                                        |                                        |                                                     | 17.5                                      |
| Octane Number                              | About 40                                  | About 40                               | 38                                                  | 40                                        |
| Distillate Yield to 300°C (Percent)        | 25                                        |                                        |                                                     | 17.5                                      |
| Residue (Percent) e/                       | 75                                        |                                        |                                                     | 72.5                                      |
| Resin (Residue) (Percent) e/               | 17                                        | 28                                     |                                                     | 29                                        |
| Resin (Crude) (Percent) e/                 | 12.7                                      |                                        |                                                     | 23.9                                      |
| Residue Less Resin (Percent) e/            | 62.3                                      |                                        |                                                     | 58.6                                      |
| Oil Fraction f/                            |                                           |                                        |                                                     |                                           |
| Gravity                                    | .886                                      | .900                                   |                                                     | .901                                      |
| Viscosity/Gravity Constant                 | .822                                      | .842                                   |                                                     | .843                                      |
| Pour Point (°C)                            | +10                                       | + 4                                    |                                                     | Below -20                                 |

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## Crude Oil Specifications (Continued)

|                                            | Emba                                                                 |                                                                        |                                      |                                      |
|--------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------|--------------------------------------|
|                                            | Iskine,<br>Northern Section,<br>Southeast Field,<br>Permian-Triassic | Iskine,<br>Northern Section,<br>New Eastern Field,<br>Permian-Triassic | Iskine,<br>West Section,<br>Jurassic | Iskine,<br>East Section,<br>Jurassic |
| Classification According to<br>GOST 912-46 | 1;1;2;331                                                            | 1;1;2;331                                                              | 1;1;3;331                            | 1;1;3;331                            |
| Serial Number <u>a/</u>                    | 15                                                                   | 16                                                                     | 26                                   | 27                                   |
| Sulfur (Weight Percent)                    | 0.10                                                                 | 0.10                                                                   | 0.05                                 | 0.10                                 |
| Gasoline                                   |                                                                      |                                                                        |                                      |                                      |
| Yield (Weight Percent) <u>b/</u>           | 5                                                                    | 25                                                                     | 27                                   | 23                                   |
| Octane Number                              | 55                                                                   | 50                                                                     | 59                                   | 62                                   |
| Octane Number (Leaded) <u>c/</u>           |                                                                      | 80                                                                     |                                      |                                      |
| Kerosene                                   |                                                                      |                                                                        |                                      |                                      |
| Yield Percent <u>d/</u>                    | 31                                                                   | 35                                                                     | 37                                   | 37                                   |
| Octane Number                              | 23                                                                   | Below 23                                                               | Below 17                             | Below 23                             |
| Distillate Yield to 300°C (Percent)        | 36                                                                   | 60                                                                     | 64                                   | 60                                   |
| Residue (Percent) <u>e/</u>                | 64                                                                   | 40                                                                     | 36                                   | 40                                   |
| Resin (Residue) (Percent) <u>e/</u>        | 6                                                                    | 5                                                                      | 2                                    | 9                                    |
| Resin (Crude) (Percent) <u>e/</u>          | 3.8                                                                  | 2.0                                                                    | .7                                   | 3.6                                  |
| Residue Less Resin (Percent) <u>e/</u>     | 60.2                                                                 | 38.0                                                                   | 35.3                                 | 36.4                                 |
| Oil Fraction <u>f/</u>                     |                                                                      |                                                                        |                                      |                                      |
| Gravity                                    | .880                                                                 | .875                                                                   | .872                                 | .872                                 |
| Viscosity/Gravity Constant                 | .814                                                                 | .807                                                                   | .803                                 | .803                                 |
| Pour Point (°C)                            | +18                                                                  | -7                                                                     | -40                                  | +39                                  |

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## Crude Oil Specifications (Continued)

## Emba

|                                            | Baychunas<br>East Field,<br>Jurassic | Baychunas<br>East Section,<br>North Field,<br>Jurassic | Baychunas<br>West Section,<br>North Field,<br>Neocomian | Baychunas<br>West Section,<br>North Field,<br>Jurassic |
|--------------------------------------------|--------------------------------------|--------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|
| Classification According to<br>GOST 912-46 | 1;1;3;331                            | 1;1;3;331                                              | 1;2;1;011                                               | 1;2;2;011                                              |
| Serial Number a/                           | 28                                   | 29                                                     | 42                                                      | 60                                                     |
| Sulfur (Weight Percent)                    | 0.20                                 | 0.20                                                   | 0.26                                                    | 0.20                                                   |
| Gasoline                                   |                                      |                                                        |                                                         |                                                        |
| Yield (Weight Percent) b/                  | 5.6                                  | 21                                                     | 0                                                       | 0                                                      |
| Octane Number                              | 58                                   | 58                                                     |                                                         |                                                        |
| Octane Number (Leaded) c/                  |                                      |                                                        |                                                         |                                                        |
| Kerosene                                   |                                      |                                                        |                                                         |                                                        |
| Yield Percent d/                           |                                      |                                                        |                                                         |                                                        |
| Octane Number                              | 33.4                                 | 34                                                     | 14                                                      | 16                                                     |
|                                            | Below 30                             | Below 30                                               | 43                                                      | About 40                                               |
| Distillate Yield to 300°C (Percent)        |                                      |                                                        |                                                         |                                                        |
| Residue (Percent) e/                       | 39                                   | 55                                                     | 14                                                      | 16                                                     |
| Resin (Residue) (Percent) e/               | 61                                   | 45                                                     | 86                                                      | 84                                                     |
| Resin (Crude) (Percent) e/                 | 12                                   | 13                                                     | 33                                                      | 22                                                     |
| Residue Less Resin (Percent) e/            | 7.3                                  | 5.8                                                    | 28.4                                                    | 18.5                                                   |
| Oil Fraction f/                            | 53.7                                 | 39.2                                                   | 57.6                                                    | 65.5                                                   |
| Gravity                                    | .881                                 | .870                                                   | .903                                                    | .893                                                   |
| Viscosity/Gravity Constant                 | .815                                 | .800                                                   | .846                                                    | .832                                                   |
| Pour Point (°C)                            | +31                                  | Above +30                                              | Below -20                                               | -11                                                    |

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## Crude Oil Specifications (Continued)

|                                            | Emba                                   |                     |                                     |                                         |
|--------------------------------------------|----------------------------------------|---------------------|-------------------------------------|-----------------------------------------|
|                                            | Baychunas<br>North Field,<br>Neocomian | Baychunas<br>Aptian | Baychunas<br>Resinous,<br>Neocomian | Koschagyl<br>Central Field,<br>Jurassic |
| Classification According to<br>GOST 912-46 | 1;1;2;011                              | 1;1;1;011           | 1;3;1;012                           | 1;2;2;111                               |
| Serial Number <u>a/</u>                    | 20                                     | 7                   | 108                                 | 47                                      |
| Sulfur (Weight Percent)                    | 0.20                                   | 0.16                | 0.23                                | 0.18                                    |
| Gasoline                                   |                                        |                     |                                     |                                         |
| Yield (Weight Percent) <u>b/</u>           | 0                                      | 0                   | 0                                   | 14                                      |
| Octane Number                              |                                        |                     |                                     | 75                                      |
| Octane Number (Leaded) <u>c/</u>           |                                        |                     |                                     |                                         |
| Kerosene                                   |                                        |                     |                                     |                                         |
| Yield Percent <u>d/</u>                    | 19                                     | 22                  | 14                                  | 28                                      |
| Octane Number                              | About 40                               | 42                  | 51                                  | 40                                      |
| Distillate Yield to 300°C (Percent)        | 19                                     | 22                  | 14                                  | 42                                      |
| Residue (Percent) <u>e/</u>                | 81                                     | 78                  | 86                                  | 58                                      |
| Resin (Residue) (Percent) <u>e/</u>        | 12                                     | 14                  | 52                                  | 19                                      |
| Resin (Crude) (Percent) <u>e/</u>          | 9.7                                    | 10.9                | 44.7                                | 11.0                                    |
| Residue Less Resin (Percent) <u>e/</u>     | 71.3                                   | 67.1                | 41.3                                | 47.0                                    |
| Oil Fraction <u>f/</u>                     |                                        |                     |                                     |                                         |
| Gravity                                    | .880                                   | .880                | .915                                | .886                                    |
| Viscosity/Gravity Constant                 | .814                                   | .814                | .862                                | .822                                    |
| Pour Point (°C)                            | +11                                    | -18                 | -36                                 | +19                                     |

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## Crude Oil Specifications (Continued)

Emba

|                                            | Koschagyl<br>Resinous,<br>Central Field,<br>Neocomian | Koschagyl Litter<br>Central Field,<br>(Sold by the Litter) | Koschagyl<br>Southeast Field,<br>Permian-Triassic | Koschagyl<br>Northwest Field,<br>Jurassic |
|--------------------------------------------|-------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------|-------------------------------------------|
| Classification According to<br>GOST 912-46 | 1;3;1;012                                             | 1;3;2;211                                                  | 1;2;2;121                                         | 1;2;3;331                                 |
| Serial Number a/                           | 109                                                   | 118                                                        | 50                                                | 67                                        |
| Sulfur (Weight Percent)                    | 0.40                                                  | 0.21                                                       | 0.49                                              | 0.18                                      |
| Gasoline                                   |                                                       |                                                            |                                                   |                                           |
| Yield (Weight Percent) b/                  | 0                                                     | 0.9                                                        | 5.5                                               | 17                                        |
| Octane Number                              |                                                       | 70                                                         | 77.5                                              | 59                                        |
| Octane Number (Leaded) c/                  |                                                       |                                                            |                                                   |                                           |
| Kerosene                                   |                                                       |                                                            |                                                   |                                           |
| Yield Percent d/                           | 18                                                    | 20.1                                                       | 31.5                                              | 33                                        |
| Octane Number                              | 45                                                    | 45.5                                                       | 31.5                                              | 25                                        |
| Distillate Yield to 300°C (Percent)        | 18                                                    | 21                                                         | 37                                                | 50                                        |
| Residue (Percent) e/                       | 82                                                    | 79                                                         | 63                                                | 50                                        |
| Resin (Residue) (Percent) e/               | 41                                                    | 45                                                         | 30                                                | 18                                        |
| Resin (Crude) (Percent) e/                 | 33.6                                                  | 35.5                                                       | 18.9                                              | 9.0                                       |
| Residue Less Resin (Percent) e/            | 48.4                                                  | 43.5                                                       | 44.1                                              | 41.0                                      |
| Oil Fraction f/                            |                                                       |                                                            |                                                   |                                           |
| Gravity                                    | .925                                                  | .902                                                       | .893                                              | .885                                      |
| Viscosity/Gravity Constant                 | .876                                                  | .844                                                       | .832                                              | .821                                      |
| Pour Point (°C)                            | -20                                                   | -9                                                         | +9                                                | +27                                       |

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## Crude Oil Specifications (Continued)

Emba

|                                                 |                                                                        |                                                      |
|-------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------|
| Komsomol<br>(Narmundanaskaya),<br>Plant Mixture | Komsomol<br>(Narmundanaskaya)<br>At contact of<br>Aptian and Neocomian | Kulsarskaya<br>Central Section,<br>IV Upper Jurassic |
|-------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------|

Classification According to

GOST 912-46

Serial Number a/

Sulfur (Weight Percent)

Gasoline

Yield (Weight Percent) b/

Octane Number

Octane Number (Leaded) c/

Kerosene

Yield Percent d/

Octane Number

Distillate Yield to 300°C (Percent)

Residue (Percent) e/

Resin (Residue) (Percent) e/

Resin (Crude) (Percent) e/

Residue Less Resin (Percent) e/

Oil Fraction f/

Gravity

Viscosity/Gravity Constant

Pour Point (°C)

1;2;1;011  
431;1;1;011  
81;1;3;331  
30

0.15

0.10

0.28

0

0

13.4

3.7

16

18

29.6

71.5

47

40

10

43

16

18

43

57

84

82

57

12

24

14

12

6.8

20.2

11.5

6.8

50.2

63.8

70.5

50.2

.880

.896

.885

.884

.828

.838

.821

-30

-18

+35

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## Crude Oil Specifications (Continued)

Emba

| Kulsarskaya,<br>Central Section,<br>XIX Middle Jurassic | Kulsarskaya,<br>Central Section,<br>XIXa Middle Jurassic | Kulsarskaya,<br>Central Section,<br>Jurassic | Kulsarskaya,<br>Central Section,<br>II Neocomian |
|---------------------------------------------------------|----------------------------------------------------------|----------------------------------------------|--------------------------------------------------|
|---------------------------------------------------------|----------------------------------------------------------|----------------------------------------------|--------------------------------------------------|

Classification According to

GOST 912.46

Serial Number a/

Sulfur (Weight Percent)

Gasoline

Yield (Weight Percent) b/

Octane Number

Octane Number (Leaded) c/

Kerosene

Yield Percent d/

Octane Number

Distillate Yield to 300°C (Percent)

Residue (Percent) e/

Resin (Residue) (Percent) e/

Resin (Crude) (Percent) e/

Residue Less Resin (Percent) e/

Oil Fraction f/

Gravity

Viscosity/Gravity Constant

Pour Point (°C)

-;-;-3--

-;-;-3--

-;-;-3--

-;-;-3--

21.5  
62.529.2  
6015.3  
740.7  
70.5

23

.889

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Crude Oil Specifications (Continued)

Emba

Kulsarskaya,  
Central Section,  
II & III Neocomian

Classification According to  
GOST 912-46

Serial Number a/

Sulfur (Weight Percent)

Gasoline

--;--;3-1

Yield (Weight Percent) b/

Octane Number

Octane Number (Leaded) c/

7.9

59

Kerosene

Yield Percent d/

Octane Number

Distillate Yield to 300°C (Percent)

Residue (Percent) e/

Resin (Residue) (Percent) e/

Resin (Crude) (Percent) e/

Residue Less Resin (Percent) e/

Oil Fraction f/

Gravity

Viscosity/Gravity Constant

Pour Point (°C)

.884

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## Crude Oil Specifications

## Second Baku

|                                            | Severokamskaya<br>A Series | Polaznenskaya | Chusovoy  | Krasnokamsk<br>A Series |
|--------------------------------------------|----------------------------|---------------|-----------|-------------------------|
| Classification According to<br>GOST 912-46 | 2;2;3;332                  | 2;2;3;332     | 2;3;3;113 | 2;3;3;332               |
| Serial Number a/                           | 135                        | 136           | 143       | 151                     |
| Sulfur (Weight Percent)                    | 0.70                       | 0.90          | 4.5       | 1.0                     |
| Gasoline                                   |                            |               |           |                         |
| Yield (Weight Percent) b/                  | 17                         | 19            | 18.5      | 15.5                    |
| Octane Number                              | 49                         | 48            | 72        | 50                      |
| Octane Number (Leaded) c/                  |                            |               | 90        | 80                      |
| Kerosene                                   |                            |               |           |                         |
| Yield Percent d/                           | 25                         | 24            | 20.5      | 24.5                    |
| Octane Number                              | 5                          | 5             | 52        | 10                      |
| Distillate Yield to 300°C (Percent)        | 42                         | 43            | 39        | 40                      |
| Residue (Percent) e/                       | 58                         | 57            | 61        | 60                      |
| Resin (Residue) (Percent) e/               | 31                         | 31            | Above 60  | 50                      |
| Resin (Crude) (Percent) e/                 | 18.0                       | 17.7          | 23.8      | 30.0                    |
| Residue Less Resin (Percent) e/            | 40.0                       | 39.3          | 37.2      | 30.0                    |
| Oil Fraction f/                            |                            |               |           |                         |
| Gravity                                    | .915                       | .915          | .980      | .917                    |
| Viscosity/Gravity Constant                 | .862                       | .862          | .954      | .865                    |
| Pour Point (°C)                            | +28                        | +30           | +23       | +30                     |
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## Crude Oil Specifications (Continued)

## Second Baku

|                                         | Buguruslan | Kalinovka-Kopeykinskaya | Novostepanovskaya | Syzran'   |
|-----------------------------------------|------------|-------------------------|-------------------|-----------|
| Classification According to GOST 912-46 | 2;3;2;332  | 2;3;3;333               | 2;3;3;333         | 2;3;3;332 |
| Serial Number a/                        | 138        | 161                     | 162               | 152       |
| Sulfur (Weight Percent)                 | 2.8        | 3.83                    | 2.70              | 2.0       |
| Gasoline                                |            |                         |                   |           |
| Yield (Weight Percent) b/               | 8.7        | 17                      | 15                | 15        |
| Octane Number                           | 61         | 60                      | 60                | 49        |
| Octane Number (Leaded) c/               |            | 82.5                    |                   |           |
| Kerosene                                |            |                         |                   |           |
| Yield Percent d/                        | 26.3       | 22                      |                   | 20        |
| Octane Number                           | 16         | 26                      | 27                | 28        |
| Distillate Yield to 300°C (Percent)     | 35         | 39                      |                   | 35        |
| Residue (Percent) e/                    | 65         | 61                      |                   | 65        |
| Resin (Residue) (Percent) e/            | 69         | 65                      | 40                | 58        |
| Resin (Crude) (Percent) e/              | 44.8       | 39.6                    |                   | 37.7      |
| Residue Less Resin (Percent) e/         | 20.2       | 21.4                    |                   | 27.3      |
| Oil Fraction f/                         |            |                         |                   |           |
| Gravity                                 | .913       | .930                    | .930              | .920      |
| Viscosity/Gravity Constant              | .860       | .883                    | .883              | .869      |
| Pour Point (°C)                         | +20        | +39                     | +30               | +30       |

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## Crude Oil Specifications (Continued)

## Second Baku

|                                            | Stavropol'<br>Devonian | Karlinskaya | Buranchinskaya | Kuz'minovskaya |
|--------------------------------------------|------------------------|-------------|----------------|----------------|
| Classification According to<br>GOST 912-46 | 2;3;3:332              | 2;3;3:222   | 2;3;3:332      | 2;3;3:332      |
| Serial Number <u>a/</u>                    | 153                    | 144         | 146            | 147            |
| Sulfur (Weight Percent)                    | 1.63                   | 4.32        | 2.48           | 2.17           |
| Gasoline                                   |                        |             |                |                |
| Yield (Weight Percent) <u>b/</u>           | 18                     | 7.5         | 16             | 17.5           |
| Octane Number                              | 55                     | 65          | 53             | 50.0           |
| Octane Number (Leaded) <u>c/</u>           |                        |             |                |                |
| Kerosene                                   |                        |             |                |                |
| Yield Percent <u>d/</u>                    | 23                     | 28.5        | 20             | 19.5           |
| Octane Number                              | Below 20               | 32          | 22             | 20             |
| Distillate Yield to 300°C (Percent)        | 41                     | 36          | 36             | 37             |
| Residue (Percent) <u>e/</u>                | 59                     | 64          | 64             | 63             |
| Resin (Residue) (Percent) <u>e/</u>        | 42                     | Above 60    | 51             | 51             |
| Resin (Crude) (Percent) <u>e/</u>          | 24.8                   | 38.4        | 32.6           | 32.1           |
| Residue Less Resin (Percent) <u>e/</u>     | 34.2                   | 25.6        | 31.4           | 30.9           |
| Oil Fraction <u>f/</u>                     |                        |             |                |                |
| Gravity                                    | About .907             | .920        | .920           | .922           |
| Viscosity/Gravity Constant                 | .851                   | .869        | .869           | .872           |
| Pour Point (°C)                            | +46                    | +28         | +27            | +33            |

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## Crude Oil Specifications (Continued)

|                                            | Second Baku       |                  |                  |                         |
|--------------------------------------------|-------------------|------------------|------------------|-------------------------|
|                                            | Kinzebulstovskaya | Ishimbay         | Kusyapkulovskaya | Termen'-<br>Yelginskaya |
| Classification According to<br>GOST 912-46 |                   |                  |                  |                         |
| Serial Number <u>a/</u>                    | 2;3;3;332<br>148  | 2;3;3;333<br>157 | 2;3;3;333<br>158 | 2;3;3;333<br>159        |
| Sulfur (Weight Percent)                    | 2.76              | 2.7              | 3.5              | 3.0                     |
| Gasoline                                   |                   |                  |                  |                         |
| Yield (Weight Percent) <u>b/</u>           | 11                | 15               | 7                | 15                      |
| Octane Number                              | 59.5              | 52               | 55               | 51.5                    |
| Octane Number (Leaded) <u>c/</u>           |                   | 82               |                  |                         |
| Kerosene                                   |                   |                  |                  |                         |
| Yield Percent <u>d/</u>                    | 21                | 28               | 31               | 27                      |
| Octane Number                              | 20                | 25               | 20               | 21.5                    |
| Distillate Yield to 300°C (Percent)        | 32                | 43               | 38               | 42                      |
| Residue (Percent) <u>e/</u>                | 68                | 57               | 62               | 58                      |
| Resin (Residue) (Percent) <u>e/</u>        | 73                | 50               | Above 60         | 69                      |
| Resin (Crude) (Percent) <u>e/</u>          | 49.6              | 28.5             | 37.2             | 34.5                    |
| Residue Less Resin (Percent) <u>e/</u>     | 18.4              | 28.5             | 24.8             | 23.5                    |
| Oil Fraction <u>f/</u>                     |                   |                  |                  |                         |
| Gravity                                    | .920              | .935             | .940             | .935                    |
| Viscosity/Gravity Constant                 | .869              | .890             | .897             | .890                    |
| Pour Point (°C)                            | +24               | +28              | +23              | +28                     |

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## Crude Oil Specifications (Continued)

|                                            | Second Baku              |                                     |                     |           | Shugurovo |
|--------------------------------------------|--------------------------|-------------------------------------|---------------------|-----------|-----------|
|                                            | Tuymazy<br>Carboniferous | Tuymazy<br>Tournaisian<br>Formation | Tuymazy<br>Devonian |           |           |
| Classification According to<br>GOST 912-46 | 2;3;2;333                | 3;2;2;332                           | 2;3;3;332           | 2;3;3;333 |           |
| Serial Number a/                           | 139                      | 149                                 | 150                 | 160       |           |
| Sulfur (Weight Percent)                    | 3.20                     | 2.63                                | 1.5                 | 1.89      |           |
| Gasoline                                   |                          |                                     |                     |           |           |
| Yield (Weight Percent) b/                  | 10                       | 10                                  | 19                  | 8         |           |
| Octane Number                              | 45                       | 49                                  | 50                  | 51        |           |
| Octane Number (Leaded) c/                  |                          | 80                                  |                     |           |           |
| Kerosene                                   |                          |                                     |                     |           |           |
| Yield Percent d/                           | 22                       | 23                                  | 22                  | 22        |           |
| Octane Number                              | 8.5                      | 26                                  | Below 20            | Below 30  |           |
| Distillate Yield to 300°C (Percent)        | 32                       | 33                                  | 41                  | 30        |           |
| Residue (Percent) e/                       | 68                       | 67                                  | 59                  | 70        |           |
| Resin (Residue) (Percent) e/               | 82                       | Above 60                            | Above 60            | 64        |           |
| Resin (Crude) (Percent) e/                 | 55.8                     | 40.2                                | 35.4                | 44.8      |           |
| Residue Less Resin (Percent) e/            | 12.2                     | 26.8                                | 23.6                | 25.2      |           |
| Oil Fraction f/                            |                          |                                     |                     |           |           |
| Gravity                                    | .945                     | .926                                | .916                | .930      |           |
| Viscosity/Gravity Constant                 | .904                     | .878                                | .864                | .883      |           |
| Pour Point (°C)                            | +20                      | +24                                 | +24                 | +40       |           |

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## Crude Oil Specifications

| Classification According to<br>GOST 912-46<br>Serial Number <u>a/</u><br>Sulfur (Weight Percent)<br>Gasoline | Groznyy                                   |                                         |                                                     |                                             |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------|-----------------------------------------------------|---------------------------------------------|
|                                                                                                              | Groznyy<br>Paraffinic,<br>(Oktyabr'skaya) | Groznyy<br>Paraffinic,<br>West Sections | Groznyy<br>Paraffinic,<br>Solenaya Balka<br>Section | Groznyy<br>Paraffinic,<br>Layer Under Fault |
| Yield (Weight Percent) <u>b/</u>                                                                             | 1;2;3;332<br>75                           | 1;2;3;332<br>76                         | 1;2;3;332<br>77                                     | 1;2;3;332<br>78                             |
| Octane Number                                                                                                | 0.19                                      | 0.20                                    | 0.18                                                | 0.21                                        |
| Octane Number (Leaded) <u>c/</u>                                                                             | 14<br>53                                  | 5.5<br>51.5                             | 16<br>52.5                                          | 17<br>54                                    |
| Kerosene                                                                                                     |                                           |                                         |                                                     |                                             |
| Yield Percent <u>d/</u>                                                                                      | 22                                        | 25.5                                    | 26                                                  | 21                                          |
| Octane Number                                                                                                | 8                                         | 28                                      | 28                                                  | 28                                          |
| Distillate Yield to 300°C (Percent)                                                                          | 36                                        | 31                                      | 42                                                  | 38                                          |
| Residue (Percent) <u>e/</u>                                                                                  | 64                                        | 69                                      | 58                                                  | 62                                          |
| Resin (Residue) (Percent) <u>e/</u>                                                                          | 25                                        | 17                                      | 21                                                  | 30                                          |
| Resin (Crude) (Percent) <u>e/</u>                                                                            | 16.0                                      | 11.7                                    | 12.2                                                | 18.6                                        |
| Residue Less Resin (Percent) <u>e/</u>                                                                       | 48.0                                      | 57.3                                    | 45.8                                                | 43.4                                        |
| Oil Fraction <u>f/</u>                                                                                       |                                           |                                         |                                                     |                                             |
| Gravity                                                                                                      | .905                                      | .905                                    | .915                                                | .906                                        |
| Viscosity/Gravity Constant                                                                                   | .848                                      | .848                                    | .862                                                | .850                                        |
| Pour Point (°C)                                                                                              | +44                                       | +41                                     | +39                                                 | +42                                         |

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## Crude Oil Specifications (Continued)

|                                            | Groznyy   |           |                    | Gudermes                     |                               |                              | Gudermes |         |                    | Oysangurskaya                |                               |                              |
|--------------------------------------------|-----------|-----------|--------------------|------------------------------|-------------------------------|------------------------------|----------|---------|--------------------|------------------------------|-------------------------------|------------------------------|
|                                            | Groznyy   | Groznyy   | Oily Paraffin-Free | Oil Well No. 7,<br>Pool XXII | Oil Well No. 22,<br>Pool XXII | Oil Well No. 5,<br>Pool XXII | Groznyy  | Groznyy | Oily Paraffin-Free | Oil Well No. 7,<br>Pool XXII | Oil Well No. 22,<br>Pool XXII | Oil Well No. 5,<br>Pool XXII |
| Classification According to<br>GOST 912-46 | 1;3;1;312 | 1;2;2;312 | 1;3;1;312          | 1;2;2;312                    | 1;2;3;231                     | 1;2;3;332                    | 104      | 54      | 54                 | 65                           | 81                            | 81                           |
| Serial Number a/                           | 0.23      | 0.40      | 0.23               | 0.40                         | 0.33                          | 0.15                         |          |         |                    |                              |                               |                              |
| Sulfur (Weight Percent)                    |           |           |                    |                              |                               |                              |          |         |                    |                              |                               |                              |
| Gasoline                                   |           |           |                    |                              |                               |                              |          |         |                    |                              |                               |                              |
| Yield (Weight Percent) b/                  | 21.5      | 28        | 21.5               | 28                           | About 2                       | 19                           | 58       | 60      | About 68           | About 68                     | 59                            | 59                           |
| Octane Number                              |           |           |                    |                              |                               |                              |          |         |                    |                              |                               |                              |
| Octane Number (Leaded) c/                  |           |           |                    |                              |                               |                              |          |         |                    |                              |                               |                              |
| Kerosene                                   |           |           |                    |                              |                               |                              |          |         |                    |                              |                               |                              |
| Yield Percent d/                           | 20.5      | 21        | 20.5               | 21                           | 19                            | 19.7                         | 44       | 41      | 22                 | 29                           | 29                            | 29                           |
| Octane Number                              |           |           |                    |                              |                               |                              |          |         |                    |                              |                               |                              |
| Distillate Yield to 300°C (Percent)        | 42        | 49        | 42                 | 49                           | 21                            | Est.Av. 38.7                 | 58       | 51      | 79                 | 61.3                         | 61.3                          | 61.3                         |
| Residue (Percent) e/                       | 42        | 51        | 42                 | 51                           | 34                            | 29                           | 42       | 31      | 26.9               | 17.8                         | 17.8                          | 17.8                         |
| Resin (Residue) (Percent) e/               | 24.4      | 15.8      | 24.4               | 15.8                         | 52.1                          | 43.5                         | 33.6     | 35.2    |                    |                              |                               |                              |
| Resin (Crude) (Percent) e/                 |           |           |                    |                              |                               |                              |          |         |                    |                              |                               |                              |
| Residue Less Resin (Percent) e/            |           |           |                    |                              |                               |                              |          |         |                    |                              |                               |                              |
| Oil Fraction f/                            |           |           |                    |                              |                               |                              |          |         |                    |                              |                               |                              |
| Gravity                                    | .922      | .920      | .922               | .920                         | .901                          | .904                         | .872     | .869    | .843               | .847                         | .847                          | .847                         |
| Viscosity/Gravity Constant                 | -17       | +10       | -17                | +10                          | +44                           | +41                          |          |         |                    |                              |                               |                              |
| Pour Point (°C)                            | -91       | -         | -91                | -                            | -                             | -                            |          |         |                    |                              |                               |                              |

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## Crude Oil Specifications (Continued)

## Groznyy

Oysangurskaya  
Oil Well No. 41,  
Pool XXIIMalgobek  
HeavyMalgobek  
Light

Classification According to

GOST 912-46

Serial Number a/

Sulfur (Weight Percent)

Gasoline

1;2;3;331  
69  
0.411;2;1;012  
44  
0.371;3;3;332  
127  
0.30

Yield (Weight Percent) b/

Octane Number

Octane Number (Leaded) c/

About 30  
About 58

0

20  
53.5

Kerosene

Yield Percent d/

Octane Number

11  
5321  
15

Distillate Yield to 300°C (Percent)

Residue (Percent) e/

Resin (Residue) (Percent) e/

Resin (Crude) (Percent) e/

Residue Less Resin (Percent) e/

Oil Fraction f/

55  
45  
22  
9.9  
35.111  
89  
31  
27.6  
61.441  
59  
52  
30.7  
28.3

Gravity

Viscosity/Gravity Constant

Pour Point (°C)

.903  
.846  
+45.912  
.858  
Below -20.917  
.865  
+40

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## Crude Oil Specifications (Continued)

|                                            | Groznyy                |                        |  | Ali-Yurt<br>Oil Well No. 3 | Gorskaya<br>Heavy<br>Pool II |
|--------------------------------------------|------------------------|------------------------|--|----------------------------|------------------------------|
|                                            | Voznesenskaya<br>Heavy | Voznesenskaya<br>Light |  |                            |                              |
| Classification According to<br>GOST 912-46 | 1;3;1;113              | 1;3;2;122              |  | 1;3;2;112                  | 1;2;1;112                    |
| Serial Number a/                           | 91                     | 117                    |  | 115                        | 31                           |
| Sulfur (Weight Percent)                    | 0.33                   | 0.25                   |  | 0.18                       | 0.24                         |
| Gasoline                                   |                        |                        |  |                            |                              |
| Yield (Weight Percent) b/                  | 0.4                    | 1                      |  | About 0.2                  | 0.2                          |
| Octane Number                              | 79                     | 80                     |  | About 80                   | 82                           |
| Octane Number (Leaded) c/                  |                        |                        |  |                            |                              |
| Kerosene                                   |                        |                        |  |                            |                              |
| Yield Percent d/                           | 17.6                   | 28                     |  | 17.8                       | 24.2                         |
| Octane Number                              | 41                     | 36                     |  | 41                         | 49                           |
| Distillate Yield to 300°C (Percent)        | 18                     | 29                     |  | 18                         | 24.4                         |
| Residue (Percent) e/                       | 82                     | 71                     |  | 82                         | 75.6                         |
| Resin (Residue) (Percent) e/               | 44                     | 47                     |  | 73                         | 35                           |
| Resin (Crude) (Percent) 3/                 | 36.1                   | 33.4                   |  | 59.9                       | 26.5                         |
| Residue Less Resin (Percent) e/            | 45.9                   | 37.6                   |  | 22.1                       | 49.1                         |
| Oil Fraction f/                            |                        |                        |  |                            |                              |
| Gravity                                    | .930                   | .918                   |  | .912                       | .913                         |
| Viscosity/Gravity Constant                 | .883                   | .868                   |  | .858                       | .860                         |
| Pour Point (°C)                            | -20                    | + 4                    |  | + 5                        | Below -16                    |

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## Crude Oil Specifications (Continued)

|                                            | Groznyy         |  | Gorskaya<br>Heavy<br>Pools III & IV | Gorskaya<br>Heavy<br>Pool XVIII | Gorskaya<br>Paraffinic | Tash-Kalinskaya |
|--------------------------------------------|-----------------|--|-------------------------------------|---------------------------------|------------------------|-----------------|
|                                            |                 |  |                                     |                                 |                        |                 |
| Classification According to<br>GOST 912-46 |                 |  |                                     |                                 |                        |                 |
| Serial Number a/                           | 1;2;2;112<br>48 |  |                                     | 1;2;3;112<br>61                 | 1;2;3;231<br>64        | 1;2;2;331<br>56 |
| Sulfur (Weight Percent)                    | 0.22            |  |                                     | 0.21                            | 0.25                   | 0.23            |
| Gasoline                                   |                 |  |                                     |                                 |                        |                 |
| Yield (Weight Percent) b/                  | 0.2             |  |                                     | 0.8                             |                        |                 |
| Octane Number                              | 81              |  |                                     | 78                              | 5                      | About 20        |
| Octane Number (Leaded) c/                  |                 |  |                                     |                                 | 65                     | About 60        |
| Kerosene                                   |                 |  |                                     |                                 |                        |                 |
| Yield Percent d/                           | 24.2            |  |                                     | 23.6                            | 27                     | 26              |
| Octane Number                              | 54              |  |                                     | 40                              | 28                     | 0               |
| Distillate Yield to 300°C (Percent)        | 24.4            |  |                                     | 24.4                            | 32                     | 46              |
| Residue (Percent) e/                       | 75.6            |  |                                     | 75.6                            | 68                     | 54              |
| Resin (Residue) (Percent) e/               | 35              |  |                                     | 30                              | 30                     | 20              |
| Resin (Crude) (Percent) e/                 | 26.5            |  |                                     | 22.7                            | 20.4                   | 10.8            |
| Residue Less Resin (Percent) e/            | 49.1            |  |                                     | 52.9                            | 47.6                   | 43.2            |
| Oil Fraction f/                            |                 |  |                                     |                                 |                        |                 |
| Gravity                                    | .905            |  |                                     | .908                            | .900                   | About .892      |
| Viscosity/Gravity Constant                 | .848            |  |                                     | .853                            | .842                   | About .820      |
| Pour Point (°C)                            | -10             |  |                                     | +35                             | +45                    | +20             |

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## Crude Oil Specifications

| Kubano-Chernomorskiy                          |                                     | Apsheronskiy                                  |                          | Apsheronskiy |  | Apsheronskiy<br>Levels I & III |
|-----------------------------------------------|-------------------------------------|-----------------------------------------------|--------------------------|--------------|--|--------------------------------|
| Apsheronskiy<br>Heavy,<br>Pool C <sub>1</sub> | West Sections,<br>Shirvanskiy Wells | Light, Paraffin-<br>Free, Pool C <sub>2</sub> |                          |              |  |                                |
| 1;2;1;113<br>32<br>0.23                       | 1;3;1;113<br>96<br>0.34             | 1;3;2;322<br>121<br>0.18                      | 1;3;3;333<br>133<br>0.27 |              |  |                                |
| 6<br>72                                       | 1<br>76                             | 31<br>58                                      | 7<br>62                  |              |  |                                |
| Kerosene                                      |                                     |                                               |                          |              |  |                                |
| Yield Percent <u>d/</u>                       | 29                                  | 22                                            | 25                       | 32           |  |                                |
| Octane Number                                 | 45                                  | 54                                            | 30                       | 29           |  |                                |
| Distillate Yield to 300°C (Percent)           |                                     |                                               |                          |              |  |                                |
| Residue (Percent) <u>e/</u>                   | 35                                  | 23                                            | 56                       | 39           |  |                                |
| Resin (Residue) (Percent) <u>e/</u>           | 65                                  | 77                                            | 44                       | 61           |  |                                |
| Resin (Crude) (Percent) <u>e/</u>             | 28                                  | 39                                            | 36                       | 40           |  |                                |
| Residue Less Resin (Percent) <u>e/</u>        | 18.2                                | 30.0                                          | 15.8                     | 24.4         |  |                                |
| Oil Fraction <u>f/</u>                        | 46.8                                | 47.0                                          | 28.2                     | 36.6         |  |                                |
| Gravity                                       |                                     |                                               |                          |              |  |                                |
| Viscosity/Gravity Constant                    | .934                                | .944                                          | .922                     | .934         |  |                                |
| Pour Point (°C)                               | .889                                | .902                                          | .872                     | .889         |  |                                |
|                                               | Below -20                           | -20                                           | -11                      | +25          |  |                                |

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## Crude Oil Specifications (Continued)

| Kubano-Chernomorskiy                       |           | Apsheronskiy |  | Central Sections,<br>Shirvanskiy Wells |  | Khadyzhenskaya |  | Gora Asfal' Tovaya |  | Shirokaya Balka |  |
|--------------------------------------------|-----------|--------------|--|----------------------------------------|--|----------------|--|--------------------|--|-----------------|--|
|                                            |           |              |  |                                        |  | Light          |  | Light              |  | Light           |  |
| Classification According to<br>GOST 912-46 | -;-;-;11- | 1;2;3;213    |  | 1;2;3;332                              |  | 1;2;3;332      |  | 1;2;3;332          |  | 1;2;3;332       |  |
| Serial Number a/                           |           | 63           |  | 82                                     |  | 83             |  | 83                 |  | 83              |  |
| Sulfur (Weight Percent)                    |           | 0.21         |  | 0.18                                   |  | 0.31           |  | 0.31               |  | 0.31            |  |
| Gasoline                                   |           |              |  |                                        |  |                |  |                    |  |                 |  |
| Yield (Weight Percent) b/                  | 4         | 16           |  | 21.5                                   |  | 20             |  | 20                 |  | 20              |  |
| Octane Number                              | 76        | 69           |  | 59                                     |  | 62.5           |  | 62.5               |  | 62.5            |  |
| Octane Number (Leaded) c/                  |           |              |  |                                        |  |                |  |                    |  |                 |  |
| Kerosene                                   |           |              |  |                                        |  |                |  |                    |  |                 |  |
| Yield Percent d/                           |           | 27           |  | 21.5                                   |  | 22             |  | 22                 |  | 22              |  |
| Octane Number                              | 50        | 40           |  | 25                                     |  | Below 20       |  | Below 20           |  | Below 20        |  |
| Distillate Yield to 300°C (Percent)        |           | 43           |  | 43                                     |  | 42             |  | 42                 |  | 42              |  |
| Residue (Percent) e/                       |           | 57           |  | 57                                     |  | 58             |  | 58                 |  | 58              |  |
| Resin (Residue) (Percent) e/               |           | 28           |  | 28                                     |  | 28             |  | 28                 |  | 28              |  |
| Resin (Crude) (Percent) e/                 |           | 16.0         |  | 16.0                                   |  | 16.2           |  | 16.2               |  | 16.2            |  |
| Residue Less Resin (Percent) e/            |           | 41.0         |  | 41.0                                   |  | 41.8           |  | 41.8               |  | 41.8            |  |
| Oil Fraction f/                            |           |              |  |                                        |  |                |  |                    |  |                 |  |
| Gravity                                    |           | .928         |  | .914                                   |  | .908           |  | .908               |  | .908            |  |
| Viscosity/Gravity Constant                 |           | .880         |  | .861                                   |  | .853           |  | .853               |  | .853            |  |
| Pour Point (°C)                            |           | +25          |  | +37                                    |  | +45            |  | +45                |  | +45             |  |

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## Crude Oil Specifications (Continued)

## Kubano-Chernomorskiy

|                                            | <u>Adagumskaya</u> | <u>Kaluga</u> | <u>Keslerovskaya</u> | <u>Kutaiskaya</u> |
|--------------------------------------------|--------------------|---------------|----------------------|-------------------|
| Classification According to<br>GOST 912-46 | 1;2;1;013          | 1;3;1;013     | 1;3;2;213            | 1;3;3;222         |
| Serial Number a/                           | 112                | 113           | 119                  | 123               |
| Sulfur (Weight Percent)                    | 0.48               | 0.50          | 0.43                 | 0.20              |
| Gasoline                                   |                    |               |                      |                   |
| Yield (Weight Percent) b/                  | 0                  | 0             | 15                   | 7                 |
| Octane Number                              |                    |               | 66                   | 71                |
| Octane Number (Leaded) c/                  |                    |               |                      |                   |
| Kerosene                                   |                    |               |                      |                   |
| Yield Percent d/                           | 17                 | 11            | 26                   | 23                |
| Octane Number                              | 56                 | 50            | 57                   | 38                |
| Distillate Yield to 300°C (Percent)        | 17                 | 11            | 41                   | 30                |
| Residue (Percent) e/                       | 83                 | 89            | 59                   | 70                |
| Resin (Residue) (Percent) e/               | 72                 | 67            | 44                   | 36                |
| Resin (Crude) (Percent) e/                 | 59.8               | 59.6          | 26.0                 | 25.2              |
| Residue Less Resin (Percent) e/            | 23.2               | 29.4          | 33                   | 44.8              |
| Oil Fraction f/                            |                    |               |                      |                   |
| Gravity                                    | .957               | .946          | .942                 | .912              |
| Viscosity/Gravity Constant                 | .915               | .905          | .900                 | .858              |
| Pour Point (°C)                            | Below -20          | Below -20     | -10                  | +40               |

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## Crude Oil Specifications (Continued)

|                      |             |
|----------------------|-------------|
| Kubano-Chernomorskiy |             |
| Khadyzhenskaya       |             |
| Heavy,               | Kura-Tsetse |
| Level III            | Light       |

Classification According to  
GOST 912-46  
Serial Number a/  
Sulfur (Weight Percent)  
Gasoline

|            |           |
|------------|-----------|
| .1;3;3;222 | 1;3;3;332 |
| 124        | 129       |
| 0.21       | 0.21      |

Yield (Weight Percent) b/  
Octane Number  
Octane Number (Leaded) c/

|    |    |
|----|----|
| 2  | 15 |
| 66 | 64 |

Kerosene

Yield Percent d/  
Octane Number

|    |          |
|----|----------|
| 28 | 23       |
| 33 | Below 27 |

Distillate Yield to 300°C (Percent)  
Residue (Percent) e/  
Resin (Residue) (Percent) e/  
Resin (Crude) (Percent) e/  
Residue Less Resin (Percent) e/  
Oil Fraction f/

|      |      |
|------|------|
| 30   | 38   |
| 70   | 62   |
| 50   | 39   |
| 35.0 | 24.2 |
| 35.0 | 37.8 |

Gravity  
Viscosity/Gravity Constant  
Pour Point (°C)

|      |      |
|------|------|
| .915 | .914 |
| .862 | .861 |
| +33  | +36  |

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## Crude Oil Specifications

## Fergana

|  | Ala-Myshikskaya | Andizhan<br>Pool VII | Changyrtash | Palvantashskaya |
|--|-----------------|----------------------|-------------|-----------------|
|--|-----------------|----------------------|-------------|-----------------|

Classification According to

GOST 912-46

Serial Number a/

Sulfur (Weight Percent)

Gasoline

Yield (Weight Percent) b/

Octane Number

Octane Number (Leaded) c/

Kerosene

Yield Percent d/

Octane Number

Distillate Yield to 300°C (Percent)

Residue (Percent) e/Resin (Residue) (Percent) e/Resin (Crude) (Percent) e/Residue Less Resin (Percent) e/Oil Fraction f/

Gravity

Viscosity/Gravity Constant

Pour Point (°C)

|                     |                     |                     |                     |
|---------------------|---------------------|---------------------|---------------------|
| 1;2;3;331<br>68     | 1;2;3;331<br>71     | 1;2;3;332<br>84     | 1;3;3;331<br>125    |
| 0.11                | 0.27                | 0.41                | 0.22                |
| 13.8                | 16                  | 12                  | 10                  |
| 51.5                | 41                  | 53                  | 50.5                |
| 31.2<br>Below 20    | 29<br>Below 23      | 24<br>12            | 33<br>Below 20      |
| 45<br>55<br>25      | 45<br>55<br>25      | 36<br>64<br>21      | 43<br>57<br>37      |
| 13.7<br>41.3        | 13.7<br>41.3        | 11.3<br>52.7        | 21.1<br>35.9        |
| .893<br>.832<br>+52 | .887<br>.824<br>+48 | .910<br>.855<br>+35 | .885<br>.821<br>+43 |

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## Crude Oil Specifications (Continued)

|                                            | Fergana   |      | Kimovskaya | Chimion  | Shor-Su<br>Pool K (VIII) |
|--------------------------------------------|-----------|------|------------|----------|--------------------------|
|                                            | Nefteabad |      |            |          |                          |
| Classification According to<br>GOST 912-46 | 1;3;3;331 |      | -;--;332   | -;--;332 | -;--;332                 |
| Serial Number a/                           | 126       |      | 131        | 132      | 85                       |
| Sulfur (Weight Percent)                    | 0.42      |      | 0.40       | 0.30     | 0.35                     |
| Gasoline                                   |           |      |            |          |                          |
| Yield (Weight Percent) b/                  | 15        | 14   |            | 8        | 21                       |
| Octane Number                              | 51        | 55   |            | 55       | 54                       |
| Octane Number (Leaded) c/                  |           |      |            |          |                          |
| Kerosene                                   |           |      |            |          |                          |
| Yield Percent d/                           | 25        | 29   |            | 27       | 30                       |
| Octane Number                              | 28        | 27   |            | 27       | 9                        |
| Distillate Yield to 300°C (Percent)        | 40        | 43   |            | 35       | 51                       |
| Residue (Percent) e/                       | 60        | 57   |            | 65       | 49                       |
| Resin (Residue) (Percent) e/               | 36        | 54   |            | 65       | 23                       |
| Resin (Crude) (Percent) e/                 | 21.6      | 30.8 |            | 42.2     | 11.3                     |
| Residue Less Resin (Percent) e/            | 38.4      | 26.2 |            | 22.8     | 37.7                     |
| Oil Fraction f/                            |           |      |            |          |                          |
| Gravity                                    | .895      | .914 |            | .904     | .905                     |
| Viscosity/Gravity                          | .835      | .861 |            | .846     | .848                     |
| Pour Point (°C)                            | +50       | +32  |            | +35      | +45                      |

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Crude Oil Specifications (Continued)

Fergana

Shor-Su  
Pool L (VII)  
Shor-Su  
Pool M (V)

Classification According to  
GOST 912-46  
Serial Number a/  
Sulfur (Weight Percent)  
Gasoline  
-:-:332  
154  
1.54  
(CIA No. 823960)  
1.04

Yield (Weight Percent) b/  
Octane Number  
Octane Number (Leaded) c/  
12  
55.5  
5

Kerosene

Yield Percent d/  
Octane Number  
21  
28  
26

Distillate Yield to 300°C (Percent)  
Residue (Percent) e/  
Resin (Residue) (Percent) e/  
Resin (Crude) (Percent) e/  
Residue Less Resin (Percent) e/  
Oil Fraction f/  
33  
67  
60  
26.8  
40.2  
About 40

Gravity  
Viscosity/Gravity Constant  
Pour Point (°C)  
.905  
.848  
+40  
.912

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Crude Oil Specifications

Sakhalin

Katangliyskaya

Ekhaba

Okha  
Pool III

Okha  
Pool VII

Classification According to

GOST 912-46

Serial Number a/

Sulfur (Weight Percent)

Gasoline

Yield (Weight Percent) b/

Octane Number

Octane Number (Leaded) c/

Kerosene

Yield Percent d/

Octane Number

Distillate Yield to 300°C (Percent)

Residue (Percent) e/

Resin (Residue) (Percent) e/

Resin (Crude) (Percent) e/

Residue Less Resin (Percent) e/

Oil Fraction f/

Gravity

Viscosity/Gravity Constant

Pour Point (°C)

.938  
.894  
Below -20

.923  
.873  
+23

.948  
.908  
Below -20

.940  
.897  
+ 8

1;2;1;013  
45  
0.42

1;2;3;212  
62  
0.23

1;3;1;013  
114  
. 0.31

1;3;2;113  
116  
0.40

0

27  
71.5  
87.5

0

1  
75

10  
48

37  
40

26  
40  
Above

27  
40  
Above

10  
90  
34  
30.6  
59.4

64  
36  
33  
11.9  
24.1

26  
74  
51  
37.7  
36.3

28  
72  
48  
34.6  
37.4

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## Crude Oil Specifications (Continued)

## Sakhalin

|                                            | Okha<br>Pools XI-XII | Okha<br>Pool XIII bis | Okha<br>Pool XIV |
|--------------------------------------------|----------------------|-----------------------|------------------|
| Classification According to<br>GOST 912-46 | 1;3;3;213<br>122     | 2;2;2;112<br>134      | -;-;-;212        |
| Serial Number a/                           |                      |                       |                  |
| Sulfur (Weight Percent)                    | 0.28                 | 0.59                  |                  |
| Gasoline                                   |                      |                       |                  |
| Yield (Weight Percent) b/                  | 8                    | 2.4                   | 4                |
| Octane Number                              | 70                   | 75                    | 70               |
| Octane Number (Leaded) c/                  |                      |                       |                  |
| Kerosene                                   |                      |                       |                  |
| Yield Percent d/                           | 26                   | 31.6                  | 48               |
| Octane Number                              | 45                   | 43                    |                  |
| Distillate Yield to 300°C (Percent)        | 34                   | 34                    |                  |
| Residue (Percent) e/                       | 66                   | 66                    |                  |
| Resin (Residue) (Percent) e/               | 40                   | 30                    |                  |
| Resin (Crude) (Percent) e/                 | 39.6                 | 46.2                  |                  |
| Residue Less Resin (Percent) e/            | 26.4                 | 19.8                  |                  |
| Oil Fraction f/                            |                      |                       |                  |
| Gravity                                    | .930                 | .925                  | .920             |
| Viscosity/Gravity Constant                 | .883                 | .876                  |                  |
| Pour Point (°C)                            | +28                  | +5                    |                  |

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## Crude Oil Specifications

Ukhta

|                                            | Yarega           | Sed'iel'skaya    | Ukhta<br>Oil Field No. I | Ukhta<br>Oil Field No. III |
|--------------------------------------------|------------------|------------------|--------------------------|----------------------------|
| Classification According to<br>GOST 912-46 | 2;3;2;012<br>140 | 2;3;2;012<br>141 | 2;3;3;332<br>155         | 2;3;2;012<br>142           |
| Serial Number <u>a/</u>                    | 1.09             | 0.90             | 1.10                     | 1.20                       |
| Sulfur (Weight Percent)                    |                  |                  |                          |                            |
| Gasoline                                   |                  |                  |                          |                            |
| Yield (Weight Percent) <u>b/</u>           | 0                | 0                | 15                       | 0                          |
| Octane Number                              |                  |                  | 52                       |                            |
| Octane Number (Leaded) <u>c/</u>           |                  |                  |                          |                            |
| Kerosene                                   |                  |                  |                          |                            |
| Yield Percent <u>d/</u>                    | 12               | 17               | 25                       | 14                         |
| Octane Number                              | 45               | About 40         | 25                       | 47                         |
| Distillate Yield to 300°C (Percent)        |                  |                  |                          |                            |
| Residue (Percent) <u>e/</u>                | 12               | 17               | 40                       | 14                         |
| Resin (Residue) (Percent) <u>e/</u>        | 88               | 83               | 60                       | 86                         |
| Resin (Crude) (Percent) <u>e/</u>          | 60               | 47               | 60                       | 66                         |
| Residue Less Resin (Percent) <u>e/</u>     | 52.8             | 39.0             | 36.0                     | 56.8                       |
| Oil Fraction <u>f/</u>                     | 35.2             | 44               | 24.0                     | 29.2                       |
| Gravity                                    | .919             | .910             | .915                     | .915                       |
| Viscosity/Gravity Constant                 | .868             | .855             | .862                     | .862                       |
| Pour Point (°C)                            | -12              | +13              | +30                      | -12                        |

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Crude Oil Specifications  
Central Asia, South Petroleum Region

|                                            | <u>Uch-Kizyl</u> | <u>Khaudag</u> |
|--------------------------------------------|------------------|----------------|
| Classification According to<br>GOST 912-46 | 2;3;3;322        | 2;3;3;333      |
| Serial Number a/                           | 145              | 156            |
| Sulfur (Weight Percent)                    | 5.3              | 3.5            |
| Gasoline                                   |                  |                |
| Yield (Weight Percent) b/                  | 2                | 5              |
| Octane Number                              | 59               | 52             |
| Octane Number (Leaded) c/                  |                  |                |
| Kerosene                                   |                  |                |
| Yield Percent d/                           | 10               | 17             |
| Octane Number                              | 32               | 27             |
| Distillate Yield to 300°C (Percent)        | 12               | 22             |
| Residue (Percent) e/                       | 88               | 78             |
| Resin (Residue) (Percent) e/               | Above 60         | Above 60       |
| Resin (Crude) (Percent) e/                 | 52.8             | 46.8           |
| Residue Less Resin (Percent) e/            | 35.2             | 31.2           |
| Oil Fraction f/                            |                  |                |
| Gravity                                    | .920             | .930           |
| Viscosity/Gravity Constant                 | .869             | .883           |
| Pour Point (°C)                            | +35              | +35            |

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Crude Oil Specifications

Severnnyy (Nordviyskiy)

Nordvinskaya

Subkarniyskiy Level

Classification According to  
GOST 912-46  
Serial Number a/  
Sulfur (Weight Percent)  
Gasoline

.2;3;1;013  
137  
.91

Yield (Weight Percent) b/  
Octane Number  
Octane Number (Leaded) c/

0

Kerosene

Yield Percent d/  
Octane Number

20  
45

Distillate Yield to 300°C (Percent)  
Residue (Percent) e/  
Resin (Residue) (Percent) e/  
Resin (Crude) (Percent) e/  
Residue Less Resin (Percent) e/  
Oil Fraction f/

20  
80  
61  
48.8  
31.2

Gravity  
Viscosity/Gravity Constant  
Pour Point (°C)

.935  
.890  
-18

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## Crude Oil Specifications

## Western Region of Ukraine

|                                            | Bystrianskaya<br>Low Paraffin Content | Skhodnitsa<br>Paraffin-Free | Bitkovskaya<br>Paraffinic | Borislav<br>Paraffinic |
|--------------------------------------------|---------------------------------------|-----------------------------|---------------------------|------------------------|
| Classification According to<br>GOST 912-46 | 1;1;2;323                             | 1;2;1;322                   | 1;2;3;331                 | 1;2;3;332              |
| Serial Number <u>a/</u>                    | 14                                    | 38                          | 72                        | 86                     |
| Sulfur (Weight Percent)                    | 0.25                                  | 0.30                        | 0.32                      | 0.30                   |
| Gasoline                                   |                                       |                             |                           |                        |
| Yield (Weight Percent) <u>b/</u>           | 66                                    | 2                           | 4.5                       | 12                     |
| Octane Number                              | 56                                    | 60                          | 60                        | 60                     |
| Octane Number (Leaded) <u>c/</u>           |                                       |                             |                           |                        |
| Kerosene                                   |                                       |                             |                           |                        |
| Yield Percent <u>d/</u>                    | 9                                     | 54                          | 47.5                      | 33                     |
| Octane Number                              | 30                                    | 32                          | 0                         | 26                     |
| Distillate Yield to 300°C (Percent)        | 75                                    | 56                          | 52                        | 45                     |
| Residue (Percent) <u>e/</u>                | 25                                    | 44                          | 48                        | 55                     |
| Resin (Residue) (Percent) <u>e/</u>        | 7                                     | 25                          | 26                        | 30                     |
| Resin (Crude) (Percent) <u>e/</u>          | 1.8                                   | 11                          | 12.5                      | 16.5                   |
| Residue Less Resin (Percent) <u>e/</u>     | 23.2                                  | 33                          | 35.5                      | 38.5                   |
| Oil Fraction <u>f/</u>                     |                                       |                             |                           |                        |
| Gravity                                    | .928                                  | .925                        | .900                      | .905                   |
| Viscosity/Gravity Constant                 | .880                                  | .876                        | .842                      | .848                   |
| Pour Point (°C)                            | + 5                                   | -18                         | +43                       | +40                    |

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Crude Oil Specifications

Kamchatka

Bogachevskaya

Classification According to

GOST 912-46

1;1;2;213

Serial Number a/

13

Sulfur (Weight Percent)

0.02

Gasoline

Yield (Weight Percent) b/

15

Octane Number

68

Octane Number (Leaded) c/

Kerosene

Yield Percent d/

24

Octane Number

40

Distillate Yield to 300°C (Percent)

Residue (Percent) e/

39

Resin (Residue) (Percent) e/

61

Resin (Crude) (Percent) e/

1.5

Residue Less Resin (Percent) e/

1.0

Oil Fraction f/

60.0

Gravity

.970

Viscosity/Gravity Constant

.938

Pour Point (°C)

+ 8

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## Crude Oil Specifications

Kirovobad

|                          |                                        |
|--------------------------|----------------------------------------|
| Naphthalic<br>Paraffinic | Naphthalic<br>High Paraffin<br>Content |
|--------------------------|----------------------------------------|

Classification According to  
GOST 912-46  
Serial Number a/  
Sulfur (Weight Percent)  
Gasoline

|                 |                 |
|-----------------|-----------------|
| 1;2;2;112<br>49 | 1;2;3;032<br>87 |
| About 0.30      | About 0.19      |

Yield (Weight Percent) b/  
Octane Number  
Octane Number (Leaded) c/

|         |   |
|---------|---|
| 1<br>83 | 0 |
|---------|---|

Kerosene

Yield Percent d/  
Octane Number

|            |          |
|------------|----------|
| 31.5<br>45 | 36<br>27 |
|------------|----------|

Distillate Yield to 300°C (Percent)

|              |          |
|--------------|----------|
| 32.5<br>67.5 | 36<br>64 |
|--------------|----------|

Residue (Percent) e/

About

|    |    |
|----|----|
| 30 | 20 |
|----|----|

Resin (Residue) (Percent) e/

|      |      |
|------|------|
| 20.2 | 12.8 |
|------|------|

Resin (Crude) (Percent) e/

|      |      |
|------|------|
| 47.3 | 51.2 |
|------|------|

Residue Less Resin (Percent) e/

|  |  |
|--|--|
|  |  |
|--|--|

Oil Fraction f/

|  |  |
|--|--|
|  |  |
|--|--|

Gravity

|      |      |
|------|------|
| .926 | .918 |
|------|------|

Viscosity/Gravity

|      |      |
|------|------|
| .878 | .868 |
|------|------|

Pour Point (°C)

|     |     |
|-----|-----|
| + 4 | +35 |
|-----|-----|

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## Crude Oil Specifications

## Dagestan

|                                            | Achi      | Izberbash | Kaya-Kent | Makhachkala<br>Oil Well No. 13 |
|--------------------------------------------|-----------|-----------|-----------|--------------------------------|
| Classification According to<br>GOST 912-46 | 1;2;3;332 | 1;2;3;332 | 1;3;1;313 | 1;3;3;332                      |
| Serial Number a/                           | 79        | 80        | 105       | 128                            |
| Sulfur (Weight Percent)                    | 0.17      | 0.15      | 0.28      | 0.25                           |
| Gasoline                                   |           |           |           |                                |
| Yield (Weight Percent) b/                  |           |           |           |                                |
| Octane Number                              | 21        | 21        | 11        | About 35                       |
| Octane Number (Leaded) c/                  | 60        | 60        | 61        | About 55                       |
| Kerosene                                   |           |           |           |                                |
| Yield Percent d/                           |           |           |           |                                |
| Octane Number                              | 26        | 23        | 24        | 10                             |
|                                            | 15        | 15        | 40        | 23                             |
| Distillate Yield to 300°C (Percent)        |           |           |           |                                |
| Residue (Percent) e/                       | 47        | 44        | 35        | 45                             |
| Resin (Residue) (Percent) e/               | 53        | 56        | 65        | 55                             |
| Resin (Crude) (Percent) e/                 | 26        | 21        | 46        | 47                             |
| Residue Less Resin (Percent) e/            | 13.8      | 11.8      | 29.9      | 25.8                           |
| Oil Fraction f/                            | 39.2      | 44.2      | 35.1      | 29.2                           |
| Gravity                                    | .911      | .909      | .936      | About .908                     |
| Viscosity/Gravity Constant                 | .857      | .854      | .891      | About .853                     |
| Pour Point (°C)                            | +40       | +43       | -18       | Above +39                      |

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Crude Oil Specifications

Turkmenistan

Nebit-Dag

Classification According to  
GOST 912-46  
Serial Number a/  
Sulfur (Weight Percent)  
Gasoline

1;3;1;222  
102  
0.24

Yield (Weight Percent) b/  
Octane Number  
Octane Number (Leaded) c/

6  
68.5

Kerosene

Yield Percent d/  
Octane Number

29  
34

Distillate Yield to 300°C (Percent)  
Residue (Percent) e/  
Resin (Residue) (Percent) e/  
Resin (Crude) (Percent) e/  
Residue Less Resin (Percent) e/  
Oil Fraction f/

35  
65  
47  
30.5  
34.5

Gravity  
Viscosity/Gravity Constant  
Pour Point (°C)

.912  
.858  
Below -20

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